

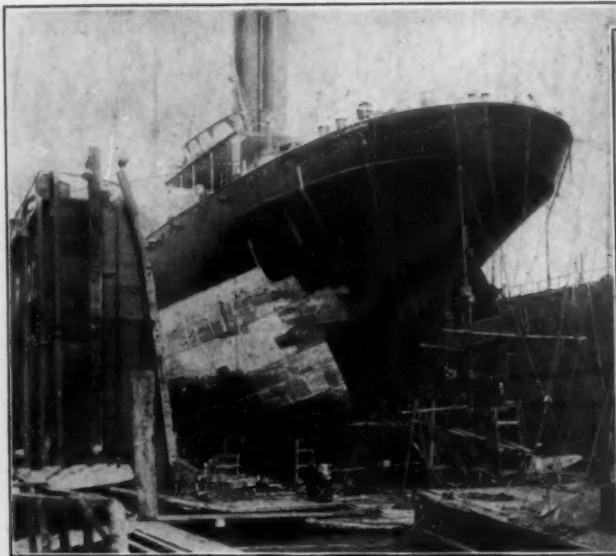
THE IRON AGE

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Welding Cast Steel Contra-Propeller to Rudder Post, Fletcher Shipyard, Hoboken, N. J.



For this weld *below the water line* —Wilson Wire was used!

If any weld must be perfect—it is the weld below the water line of a ship. Under all conditions, in spite of all kinds of pressure, stress or strain, it must hold. For once the ship is at sea, such repairs are practically impossible.

At the Fletcher Shipyard, Hoboken, N. J., they were welding a huge, steel contra-propeller to a rudder post—welding not only below the water line, but in a most vital part of the ship. And for this weld which had to *hold*—for this weld which

had to be *perfect*—Wilson Wire was used.

It is significant that in welding of this kind, welding in which no chance can be taken, welding that must be impervious to the greatest strain, stress and pressure—Wilson Wire is chosen. It is because men who have had experience with Wilson Wire know they can select the correct grade (analysis) for the metal they're welding—and that *every rod will be like every other rod* in the grade selected. This means practically perfect welding jobs.

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WILSON

WELDING MACHINES AND WELDING WIRE



Another Battery of Becker Ovens at Lackawanna

THE Bethlehem Steel Company has recently awarded a contract to the Koppers Company for an extension to its coke plant at Lackawanna, New York, consisting of an additional battery of Becker Type Combination Ovens to be fired by Koppers Gas Producers.

The Koppers Company
Pittsburgh, Penna.

Chicago, Ill.

New York City

THE IRON AGE

New York, October 7, 1926

ESTABLISHED 1855

VOL. 118, No. 15

Foundrymen From Many Lands

Join Americans in Notable Gathering—Technical and
Other Deliberations Comprehensive—Exhibit of
Foundry Equipment Impressive



FOUNDRYMEN from many parts of the world met in Detroit last week, Sept. 27 to Oct. 1, at a convention and exhibition which established a milestone in American foundry history. It was both impressive and significant. The second international foundry congress and the thirtieth annual convention and exhibition of the American Foundrymen's Association met in a city, famed for its foundry and other industrial activities. Despite the fact that the Michigan State Fair Grounds, where all events centered, were eight miles from the hotel center, the attendance surpassed all records. One evident result of the mingling of hundreds of American and Canadian foundrymen with those from ten different countries across the sea has been a better understanding of each others' foundry problems and methods and a marked step forward in international amity.

Technically the program offered a wealth of material, enriched by the papers and discussions of foreign authorities. The exhibition, the largest ever held, possibly even in Europe, made a deep impression both in the diversity and manner of its display.

Wealth of Technical Papers Presented

DECIDED interest was manifested in the technical sessions. There were 24, many of them simultaneous with others, at which over 70 papers and committee reports were presented. The attendance was unusually large in most cases. Particular interest centered in the sessions on permanent molds, on gray

iron, on foundry costs and on sand problems.

The presentation of exchange papers by visiting foreign foundrymen and participation by them in discussions were features of many of the meetings.

In the following columns it is possible to review only some of the important papers and discussions.

Large Interest in Gray Iron Problems

THREE sessions were devoted to the problems of the gray iron foundry. One of these related to cupola and shop practice and one to testing cast iron. Of the 13 papers presented at the three sessions, five were prepared by foreign authors. Several of the papers indicated results from extensive research work that have important practical application in the foundry. The keynote sounded in many of the papers and discussions was research work that would further improve the quality of iron castings.

L. L. Anthes, Toronto, Ont., past president of the association, presided at the second session, which was devoted to testing cast iron. He expressed deep regret as he announced the recent death of G. K. Elliott, Lunkenheimer Co., Cincinnati, who was on the program for the first paper of the session on the subject of "A Shearing Test for Cast Iron." This paper was read in full by J. W. Bolton, Frank Foundry Corporation, Moline, Ill. After its presentation it was decided to limit its discussion to written discussions to be submitted and included in the record. However, this limitation was not to prevent reference to some points of

the paper that might be commented on in discussing the paper that followed.

Shearing Tests for Cast Iron

The Fremont machine, which is used in France for testing cast iron, was described in Mr. Elliott's paper. This machine shears short lengths from small cylindrical test pieces, taken from the casting. One objection to the machine that was pointed out is the trouble that is experienced in obtaining reliable test pieces. For the tests made, standard test bars were used as well as samples from flanged pipe fittings made from the same ladle of iron. The values of the shearing test paralleled those for the transverse, tensile, hardness and drop tests, indicating it to be a reliable index of the strength of the iron. However, should a shearing sample be taken from a weak spot in a casting, the results would probably be less satisfactory. Tests were also made with a modified test apparatus with either a single or a double shear.

Because of deficiencies found in the machine, the author did not find the Fremont shearing test entirely

F.E.R.

Authors of Some of



H. L. CAMPBELL



D. W. TRAINE



J. A. MURPHY



KIRTLAND MARSH

satisfactory as a routine test to replace the transverse test commonly used in this country, but he was kindly disposed to it as a means to a much needed line of research. One objection to the machine for routine testing was the time and care required to secure reliable samples, and there was a question whether the results obtained from small portions of relatively large castings are indicative of the quality of either the iron or the casting, as are separate cast test bars made from the same metal as the casting. However, he concluded, there is an important field in which the shearing tests of small specimens taken from castings should be of great practical value.

French Views on Testing Cast Iron

An exhaustive paper on "Testing Cast Iron," one of the exchange papers, was prepared by Auguste-Eugene Le Thomas, metallurgist of the Indret Works of the French Navy, and was presented by E. Ronceray, celebrated French metallurgist. The author referred to numerous reports that have been prepared in many languages with the common object of discovering an efficient method of correctly ascertaining the strength of iron castings, and, incidentally, of investigating the possibility of obtaining more knowledge of the material in developing its useful qualities. Tests were made with a view of replacing special grades of cast iron with less expensive materials for castings for marine engines for battleships. The shearing method of M. Fremont was adopted, this replacing the tensile test.

Discussion

French foundrymen have left the testing of iron in the ladle to other countries, and are turning their efforts in the direction of taking test bars from castings, according to Mr. Ronceray in his discussion of the paper. The French Navy, some commercial companies and railroads have taken great interest in these tests, which have also been taken up in Spain and Czechoslovakia. The shearing test was only one part of the method of testing. French foundrymen hold that a test bar must be taken from a casting instead of being made from the same ladle of metal. He recommended the shearing test for everyday work, and the bending test where extreme accuracy is required. The criticism that has developed, he said, was more of the type of machine used than the shearing method of testing. Foundrymen do not agree as to what tests must give. The American idea is to show what the average quality is. The French want to test the weakest part. The French Navy adopted the shearing test after trying it for two years. It is making all its castings of scrap, using no pig iron in its foundry mixture.

Considerable discussion of testing methods followed. One speaker raised objection to the size of test pieces used by Mr. Elliott, and doubted if tests made from large castings would show the same results as those

from small castings. Mr. Ronceray said that the French use bending tests for the larger pieces. He regarded the tensile test of cast iron as of no value.

B. F. Shepherd, Ingersoll-Rand Co., pointed out that the weakest spot of the casting can be changed by gating, and asked if the French had any specifications for gating. Mr. Ronceray replied that it was not absolutely necessary to take the test piece from the weakest part, but said it should be taken from the part of the casting where the greatest strength is required.

It was also pointed out in the discussion that many foundries are not satisfied with present tests of cast iron, particularly the transverse test, and that they are looking for tests that will bring more accurate results. It was suggested that the shearing test might be the answer to the demand for better testing methods. A difference of opinion was expressed as to whether test bars are satisfactory in showing the quality of metal in the castings. One speaker said that he took tests of cast iron pipe and test bars, and the tests of the bars correlated with those of the pipe itself. Another tested large castings and test bars made from the same ladle of metal, and found no correlation between the two. It was pointed out that all material factors are not under control, and iron with different microstructures and physical properties is found in similar castings made the same day. The chair brought an end to the discussion with a statement that the conclusion to be derived from it is that foundrymen should not depend on one or another testing method, but should make use of all methods.

Strength in Relation to Thickness

A series of tests to determine the strength of cast iron in its relation to its thickness were outlined in a paper on that subject by W. H. Rother and V. Mazurie, Buffalo Foundry & Machine Co., Buffalo, N. Y., which was read by the latter. They pointed out that cast iron does not follow the regular steel beam formulas, and sought to find the difference in strength. Transverse, Brinell and tensile tests and chemical analyses were made and included in the paper in tabulated form.

The authors found that iron of 2.15 per cent silicon content decreased on an average of about 6 per cent in transverse strength for each $\frac{1}{2}$ in. increase in thickness between 1 and 3 in. An iron of 1.70 per cent silicon content with a 15 per cent addition of steel decreased 4 per cent for each $\frac{1}{2}$ in. increase in thickness between 1 and 3 in. An iron with 1.20 per cent silicon content and with 25 per cent steel added decreased 3.3 per cent for each $\frac{1}{2}$ in. in thickness between 1 and 3 in.

The conclusions of the authors were that the decrease in surface hardness of a casting is a direct indication of the decrease in strength. The per cent of decrease in transverse strength tends to follow the

the American Papers



OLIVER SMALLEY



R. E. WENDT



R. A. BULL



R. F. HARRINGTON

silicon content. High silicon irons show greater decrease in transverse strength than low silicon irons containing steel. Semi-steels show less decrease in strength transversally and also in tension in the 25 per cent steel heats. More research work is necessary.

Discussion

The use of the same mixture for 3-in. and 1-in. test bars was criticized by John Shaw, noted English foundryman. He and other participants in the discussion declared that there should be no lowering of the quality of cast iron. It was urged that foundrymen must sell a quality product, and the hope was expressed that, as the result of research, cast iron will be put on the same quality basis as steel.

British View of Gray Iron Problems

"Some Gray Iron Problems" was the title of a paper by John Shaw, Brightside Foundry & Engineering Co., Sheffield, England, that aroused much interest. In this the author considered the influence of sulphur and manganese on the structure of cast iron containing ordinary amounts of the other usual elements, the influence of carbon and silicon in conjunction with the other elements in the structure, and the usefulness of various chill tests to the foundrymen for judging roughly the ultimate structure of molten metal before casting. He presented several theories that have been advanced concerning the manganese-sulphur balance and the influences of furnace temperature on the formation of sulphur and manganese. A study of chill rolls was also included.

It was not very long ago, according to the author, that nearly every ill in the foundry was attributed to sulphur. Today there is danger of rushing to the opposite extreme. That means that it does not matter how much sulphur the scrap contains or if a high sulphur coke is used. All that is necessary is to raise the manganese content of pig iron and no ill effects will follow. Were that theory tried out, he doubted whether it would hold. He stressed various points, because it is generally accepted that, under cupola conditions, there is a distinct loss of sulphur if the manganese is at the ratio of not less than three to one.

In discussing chill tests, Mr. Shaw said that it may be thought that a chill test, while needed for chilled work, does not find a place in ordinary gray iron practice. For a number of years he has used nothing else, except a direct impact test. While he appreciated the value of test bars, their results are not known until after the mold is cast. By using the chill test, one has a good idea of the ultimate structure of the metal before casting.

Discussion

Mr. Shaw, in discussing his paper, pointed out that the sulphur content is increasing, due to an increase

in the use of scrap. Will the addition of manganese overcome this or will the sulphur have a bad effect? he asked. He has been making experiments along this line, but they have not been completed. He was not advocating sulphur in iron, but if foundries have it they must face it. Asked to express an opinion regarding high or low content of manganese, Mr. Shaw replied that there is little doubt that there must be a limit to the amount of manganese used to counteract sulphur. One of his important conclusions was that, if the iron was high in sulphur, it must be melted at a very high temperature. Another unsolved matter that he regarded as of extreme importance in arriving at definite conclusions in research work was the effect of the mold gases on gray iron.

One point brought out in the discussion was that foundries are now demanding high manganese iron and that the manganese content in castings has crept up. This was attributed to some extent to the fact that southern iron is now being more largely consumed in the South and, consequently, northern foundries are using more northern iron.

Dilatometric Analysis

In the closing cast iron session, Thursday afternoon, a paper on the "Principles and Chief Applications of Dilatometric Analysis of Materials" was presented. This was an exchange paper of the French Foundry Association, and its contents were summarized by E. Ronceray, who stated that the paper described a new apparatus with which some interesting research had been conducted and very valuable results obtained. He explained the apparatus and said that one of the devices had reached him too late to set up at the convention, and he would probably place it in an American foundry.

Among the conclusions of the paper were that dilatometric analysis is suited not only to massive test pieces, but to rods prepared by the agglomeration of powdered substances, and that with the dilatometer the expansibility of materials can be determined over a great temperature interval. This measurement, it is pointed out, affects numerous industrial problems such as the selection of materials for castings for engines, refrigerating machines and various other products. Mr. Ronceray said that, as more work is done along this line of research, there is more evidence that dilatometric tests are of importance and they indicate that more attention should be given to material that is put in cupolas.

High-Duty Cast Iron

One of the outstanding papers of the cast iron sessions from the standpoint of interest was on the subject of "Progress in the Production of High-Duty Cast Iron." This was a highly technical paper covering a

large amount of research, that was prepared by E. Piwowarsky, Technical High School, Aachen, Germany. The author pointed out that Germany had made great progress in the development of the quality of cast iron, and the purpose of the paper was to indicate this progress. A summary of the paper was prepared in German by the author and read by Doctor Moldenke, who translated the synopsis as he read it.

The author brought out that in recent years much interest had been taken in Germany in producing castings of high value or mechanically strong. Laboratory and practical tests prove that superheating at high temperature greatly improves the quality of castings, resulting in a very fine, mostly eutectic formation of the graphite. Using 80 per cent of scrap and a small cupola, a German foundry had been able to get, by

perature required. Doctor Moldenke observed that the paper bore out the old rule that a foundry should melt at as high a temperature as possible, even if it has to cool down before pouring.

Phosphorus in Cast Iron

"The Influences of Phosphorus on Cast Iron" was discussed in a paper given by J. T. MacKenzie, American Cast Iron Pipe Co., Birmingham. This included tables showing the results of a large number of tests. The author found that phosphorus lowers the strength and resilience, increases the Brinell hardness and stiffens the iron slightly. Data given indicated that in some cases phosphorus, by promoting fluidity and hence the soundness of the casting, helps to make a stronger casting. Among the conclusions were that for each

Important Facts Concerning the Detroit Meeting

A REGISTERED attendance of close to 6000 broke all records. Actual attendance was much larger.

With over 250 exhibitors the exhibition surpassed any previous one of the A. F. A. Several foreign displays were noted.

The foreign representatives numbered 135, including about 15 ladies.

Plant visitation was a prominent feature, for which Detroit offered unusual opportunities.

Practically unanimous approval was heard of the decision of the board of directors to hold future meetings in the spring. The postponement of the exhibition to the spring of 1928 was generally commended.

The attendance of ladies was unusually large. Over 470 were registered and an extensive entertainment program was put through.

A band concert, vaudeville entertainment and dance at the magnificent new Masonic temple attracted a large crowd Wednesday evening. It was the entertainment feature of the week.

Nearly 600 sat down at the annual banquet at the Hotel Statler on Thursday evening. Tables of German, French, Belgian, Italian and other foreign visitors were a feature.

With a registered attendance of close to 6000, all records of preceding conventions and exhibitions were shattered. It was more than double the number at the Syracuse Convention last year.

The weather, when such affairs are housed at fair grounds, is a vital factor. Last week, each day, almost without exception, was favorable. On

The technical programs, distributed over 24 sessions, offered over 70 papers and committee reports.

Continuous molding, permanent molds, and developments in sand control were the features of the exhibitions.

The weather was auspicious almost from the first day. A heavy rain marred the closing hours, Friday afternoon.

Unique events were enthusiastic sessions in French and German.

two of the days near-summer conditions prevailed. The week was in strong contrast to that at Syracuse last year.

Transportation to the fair grounds, eight miles from the hotel center, was covered by buses, street cars and taxis. The greater part of an hour was consumed by the trip, but nearly all soon became used to it.

Unbounded credit is due to the Detroit committee which prepared for and handled this convention and congress. It was headed by Robert Crawford, a prominent Detroit foundryman.

using superheating methods, very high grade castings with the same structure in thick and in thin sections. The author was able to verify by experiments that the refinement of the iron is increased as its superheating is increased. Many faults in castings were attributed to too low melting or superheating temperatures.

Dr. Moldenke made reference to a new type of furnace that he had seen recently in Germany in which the iron is superheated to a temperature of 2700 to 2900 deg. Fahr. and poured at normal temperature, and from which very fine castings are made. This is a continuous air furnace, practically an open-hearth furnace, in which until recently no coke was used. In this furnace the gas is carried around calorized steel tubes.

The author explained that, by superheating, gases are removed and the iron becomes very dense. He declared that as much attention will be given to the metallurgical treatment of cast iron as has been given to steel and that the study of alloy cast iron has an important future. Everything points to melting at high temperature and pouring at low temperature to get a fine graphite structure and fine castings.

Discussion

During the discussion the remark was made that foundrymen have been wondering for years why the addition of steel improved castings, and it was suggested that the increased strength resulting from the steel might really be due to the higher melting tem-

perature of casting the maximum strength will be found at the lowest phosphorus compatible with fluidity. For castings where resistance to shock is of importance, low phosphorus irons should be used and the necessary fluidity be obtained by raising the carbon, but ordinarily no trouble will be experienced with phosphorus running 0.80 per cent, if carbon and silicon are correctly proportioned to give the required strength.

"Heat and Scale-Resisting Cast Irons" were discussed by Oliver Smalley, New York. The author divided his paper into three parts, high-duty castings, chilling irons and scale-resisting castings. Under the first heading he considered semi-steel and the influences of graphitizers. Under the subject of chilling irons, the annealing process for car wheels was discussed and the results of tests were shown.

A well attended session was that devoted to cupola and gray iron shop practice, under the able chairmanship of J. W. Bolton, metallurgist, Frank Foundries Corporation, Moline, Ill.

Belgian Paper on Cores

"Core Supports in Large Castings," a paper by Ivan Lamoreux, Liège, Belgium, contributed in behalf of the Belgian Technical Foundry Association, was presented in abstract by J. T. MacKenzie, American Cast Iron Pipe Co., Birmingham. In pieces subjected to hydraulic or other pressure, use of threaded supports was advocated. Welding of chaplets was said to be

useless, except by modifying the composition of the metal.

Charts Used for Specifying Size of Gates and Pouring Rate

Figures and charts developed from the gating experience of a group of foundrymen and intended for use in specifying the sizes of gates and rates of pouring, were given in a paper "On Gating Iron Castings," by H. W. Dietert, United States Radiator Corporation, Detroit.

Gating knowledge, it was held, is developed only after active life service of a foundryman. Progress is slow where the new generation must begin at the starting point of the older generation. Marked progress in gating, it was held, will be made when the existing principles of gating can be described numerically and not by the present broad verbal manner. No new theories are developed in the paper, the data and charts being the result of an investigation of actual gates found in various foundries.

The charts and formulæ presented are for castings with a metal line of from 5/32 to 1/2 in. To determine some of the factors of gating in common use at the author's plant, a study was made of the rates of pouring of castings according to the weights. The pouring times of numerous molds were plotted against the weights of the castings in the molds, and the data secured indicated that there is a definite relation between pouring time and weight. The charts developed from this investigation were discussed. They were said to have enabled the foundry organization to specify sizes of the gates for the various castings and to specify the rates of pouring.

Entire Heats of Steel Melted in Cupola

"Melting All-Steel Charges in a Cupola Furnace," by T. F. Jennings, Utah Copper Co., Garfield, Utah, was another paper at this session. Heats of 30 tons are poured daily seven days a week. The melting of

entire heats of steel in the manner described was forced by the necessity of disposing of an accumulation of 12,000 tons of miscellaneous steel scrap, and the need by the author's company of a constant supply of abrasion resisting castings. No attempt was made to produce a machinable gray iron suitable for the ordinary run of castings made in an iron foundry. The only problem, therefore, was how to melt the material so the resulting metal could be handled and poured satisfactorily over the lip of the ladle. Early experiments were said to indicate that the usually recommended high fuel ratio and use of high silicon ferrosilicon are not required.

Coke of not less than 90 per cent fixed carbon and a low ash content is used. Two cupolas are employed on alternate days, one in blast and one under repair. In preparing the cupola for a heat the lining is rebuilt or repaired to a straight line with silica split brick.

The metal resulting from the all-steel charge was low in silicon and manganese and has a Brinell hardness of 600 to 712. The metal needed was one that resists abrasion and wears down uniformly without cracking or spalling.

Discussion

In the discussion following the paper Mr. Jennings gave the following as the analysis of the metal produced: Total carbon, 2.41; manganese, 0.05; phosphorus, 0.014; and silicon, 0.37 per cent.

"A Study of Iron Melted in the Cupola," a paper by R. E. Wendt and J. P. Walsted, Purdue University, Lafayette, Ind., was presented by Mr. Wendt. Data obtained from a study of cupola operation at Purdue University were given and the variation in analyses of iron in different parts of the same heat was discussed. As conclusions, the writers state that iron in the cupola melts much higher up in the stack than usually is considered to be the case, and that cupola irons may be made more uniform by changing the usual method of charging.

Steel Foundry Problems Reviewed

TWO sessions, one on steel foundry metallurgy and another on steel founding, were held, at which full programs were presented. Some of the leading papers are reviewed in the following:

R. A. Jameson, Deemer Steel Castings Co., Newcastle, Del., presided at the session on steel foundry metallurgy, Wednesday, Sept. 29. C. M. Campbell, Wirt Steel Casting Co., Cleveland, Ohio, presented a paper on "Some Physical Properties and Compositions of Cast Converter Steel." Tables were included in the paper showing the excellent record made in the author's plant in securing uniformity of composition in various classes of steel, and the remarkably good physical properties received from the steel produced. The importance of testing the steel not only after heat treatment, but in the "as cast" condition as a check on the character of the steel making was emphasized. The value of manganese in raising the strength of the steel without loss of ductility, was discussed, and mention was made of the low sulphur contents that can be secured in modern converter steel by the use of fused soda ash.

Answering questions brought up in discussion, Mr. Campbell outlined in greater detail the methods by which uniformity of analysis is attained, emphasizing particularly the importance of carrying out the steel-making process on a carefully regulated time schedule.

Open-Hearth Slags

W. C. Hamilton, American Steel Foundries, East Chicago, Ind., presented a paper on "Open Hearth Slags," bringing out the importance of a study of the composition of slags as an aid in the production of steel of high quality. He outlined the functions of acid and basic open-hearth slags as a protection to the bath and as an agent for transmitting the oxidizing action of the flame to the metal, and discussed the sources and relative proportions of the various constituents of the slag. Tables were presented showing

the analysis of the slags from several typical heats, and the effect upon melting losses in the amount of limestone used in basic practice. Reactions were suggested to explain the effect of fluorspar in thinning basic open-hearth slags which has, in the author's opinion, not been satisfactorily accounted for by existing theories.

Discussion

Discussion touched chiefly upon the author's statement that the total iron oxide in a black acid open-hearth slag is not always higher than in a light colored slag. The opinion was expressed by Mr. Sims that a slag of low iron oxide content is sometimes black on account of the presence of a high proportion of Fe_2O_3 , which cannot form a light colored silicate as does FeO , but exists in suspension.

Effect of Manganese

John Howe Hall, Taylor Wharton Iron & Steel Co., High Bridge, N. J., read a paper on "Manganese in Cast Steels," outlining the classes into which manganese steels are divided, and giving a modification of Guillet's well-known diagram. Charts and tables were presented to show that properly heat-treated steel of 0.20 to 0.30 carbon and 1.15 to 1.60 per cent manganese gives nearly a straight line stress-strain diagram in carefully executed tests with an extensometer. This is in striking contrast with the results reported by L. H. Fry in his paper "Tensile Properties of Steel Castings," in the *Proceedings of the A. S. T. M.*, Vol. 22 (1922), page 150. Mr. Fry showed, as the result of tests made in a number of shops, that commercially annealed cast steel generally gives a curved stress-strain diagram, and therefore has no true elastic limit.

Four of Mr. Fry's curves were reproduced in Mr. Hall's paper, and it was pointed out that steel giving such tests not only has no true elastic limit, but that no reliable modulus of elasticity can be figured from

these tests. The advantage from the designing engineer's standpoint of the heat-treated steel was emphasized.

Tables were presented to show that commercial annealed cast steel has a far lower shock toughness than the heat-treated castings of higher manganese content, unless the carbon of the former is left below 0.20 per cent. The shock toughness of the heat-treated cast steel is slightly higher than that of the "dead-soft" plain annealed material, while its yield point is as high as the tensile strength of the latter.

Results of tests to determine the relative value of vanadium and of high manganese in raising the strength of cast steel were also presented in tabular form. The increase of strength due to the vanadium was shown to be secured at the expense of elongation, reduction of area and bend, and little if any improvement in shock toughness, due to the use of vanadium, was found in these tests.

Tables and charts were presented to show the improvement in endurance limit of cast steel that can be secured by the use of relatively high percentages of manganese and of heat-treatment. The importance of proper heat-treatment of this steel was indicated by the low ductility and shock toughness it exhibits when given a plain annealing.

Discussion

Mr. Robinson, Industrial Works, Bay City, Mich., asked how uniform the manganese content could be kept. Mr. Hall in reply stated that the importance of uniformity of manganese content is not so great in the case of steels containing about 1.50 per cent manganese as it is for normal carbon steels. Mr. Campbell confirmed this, stating that in steels of about 0.50 per cent carbon a variation of manganese from 1.50 to 1.70 per cent produced almost no change in physical properties.

Major Bull and Chairman Jameson welcomed Mr. Hall's paper as a valuable contribution to the knowledge of steels of high manganese content, and as a great aid in combating the views of engineers who wish to write into their specifications arbitrary and unnecessary restrictions in the manganese content of steel.

Defects in Steel Castings

At the session on steel founding, papers were read on "Defects in Steel Castings in the Foundry," by R. S. Munson, Atlantic Steel Casting Co., Chester, Pa., and on "Defects in Steel Castings Discovered after Shipment from the Foundry," by J. M. Sampson, General Electric Co., Schenectady, N. Y.

Mr. Munson pointed out that the causes of defects in steel castings in the foundry can be placed under three main heads: (1) faulty design and pattern equipment, (2) improper molding and core making methods, (3) faulty melting and pouring conditions. Under these general heads he emphasized the importance of properly designed and located heads and gates, of proper plant equipment, of proper supervision over molding and core sand mixtures, and of proper methods of molding, and mentioned the work being done on apprentice training in the Chester district.

Mr. Sampson outlined the system in use in the General Electric plant of recording the nature and causes of defects discovered in the machine shops for ready reference the next time patterns that have given trouble are sent to the foundry. In this way the repetition of mistakes in methods is avoided on repeat orders. He gave also tables showing the percentages of defective castings over a six months period due to various causes, made up from accurate card records that are kept of all defects reported to the foundry.

Discussion

In discussion, Major R. A. Bull agreed with Mr. Sampson as to the value of careful records of defects, and pointed out that in many cases defects are minimized when the designers of the castings confer with the foundryman before the castings are designed, and keep in touch with the difficulties encountered in mak-

ing them, as is true in Mr. Sampson's case, where the castings are machined in the same establishment where they are made.

Mr. Young of the Detroit Steel Casting Co. asked what preventions Mr. Sampson takes to prevent rusting of the chill rails used in the molds, which often causes porosity in the castings. Chairman Hall pointed out the desirability of using external chills in preference to rails whenever possible. In reply, Mr. Sampson stated that the chill rails used are copper plated, and stated that they are used only when no other method of securing soundness can be adopted.

Leon Cammen, American Society of Mechanical Engineers, New York, spoke of the difficulties experienced by many steel foundries in making castings from inadequate patterns furnished by their customers and emphasized the desirability of having the foundries either make their own patterns, or supervise their design. He asked also whether steel made in small open-hearth furnaces is as good as that made in the larger furnaces, and pointed out how little information exists in print as to the operation of small furnaces. Mr. Sampson, Mr. Munson, Major Bull and Mr. Young stated in reply that in most cases the steel made by foundries in small open-hearth furnaces is better deoxidized and of higher quality than that produced by the operators of large open-hearth furnaces for ingot production.

Review and Future of the Steel Foundry

Major R. A. Bull, research director Electric Steel Founders Research Group, Chicago, read in abstract a contribution on "The Past Developments, Present Tendencies and Future Possibilities of the American Steel Foundry Industry." He outlined the progress of the open-hearth foundries in the last part of the 19th century, and spoke of the great stimulus given to the open-hearth foundries by the invention of green sand molding in the "gay nineties." This stimulated greatly the production of railroad castings, especially in the foundries of the Middle West, which operated chiefly by the basic process. He pointed out how limited were the facilities at the command of the steel makers of those days for preventing porosity, which resulted in the use of more aluminum than was consistent with the production of first class steel. As a result, the physical properties received from castings were decidedly poor compared to present day results. Much progress has been made also in the heat treatment of cast steel, which was very little understood in the 1890's.

Major Bull spoke of the development of crucible steel foundries for the manufacture of light castings, traced the expansion of the foundry industry to a production of 1,400,000 tons in the years 1916, 1917 and 1918, and the record output of 1,458,000 tons in 1923. He stated that the present capacity of the steel foundries of the country is 2,622,000 tons.

As the production in 1925 as reported by the American Iron and Steel Institute was but 1,252,786 tons, or 48 per cent of capacity, the steel foundry industry is faced with a serious situation. This will be met, in Major Bull's opinion, by specialization on the part of the foundries. This specialization, which began in the 1890's with the development of the foundries making railroad castings, must, in Major Bull's opinion, be greatly extended in order to ensure the permanence of the industry.

Selling Castings On Their Merits

The author pointed out the increasing tendency to market steel castings, malleable iron castings and forgings on their merits, and the growing disposition of the makers of each to recognize the merits of the others in their own proper field, instead of making exaggerated claims for their own particular product. He mentioned also the tendency of some engineers to endeavor to set unwarranted limits for the chemical composition of cast steel, and finally mentioned the direction which research work must take in the early future, including the control of molding sand mixtures in which the A. F. A. has already made great progress. the development of substitutes for aluminum of more

Authors of Some of the Papers



T. C. ADAMS



WILLARD H. ROTHER



S. M. UDALE



M. A. HOSMER

merit than those so often over-indorsed by their makers at the present time, and the improvement of heat treatment, of heading and gating, and of uni-

formity of analysis. In closing, Major Bull emphasized the importance of keeping in mind the practical, dollars-and-cents value of research work.

Various Malleable Problems Discussed

MALLEABLE cast iron was the general subject for one session and foundry problems, incident to the production of malleable castings, were discussed at a noon-time round table gathering.

Requirements of Malleable Iron

Economic desirability of changes in specifications, irrespective of their cause, may be measured by the degree in which they increase the application of the product in the industries, or permit a reduction in weight and hence in total cost of existing malleable articles, said H. A. Schwartz, manager of research the National Malleable & Steel Castings Co., Cleveland, in a paper on "What May Be Required of Malleable Cast Iron." No requirement should be incorporated which does not raise the useful value of the material more than its cost, otherwise the product, deservedly or not, would fall into disuse.

The purchaser is confronted with the problem of how to describe adequately the metal of which his castings are made, said Mr. Schwartz. Machinability requirements are at least implied in many agreements, yet there is no satisfactory means of describing quantitatively the degree of machinability which the consumer may consider indispensable. Thus it is difficult to determine whether or not a given material possesses a normal cutting resistance. Theoretically it should be possible to describe in quantitative terms all the properties desired in a given material. Practically that is a vision far beyond the limitations of present engineering knowledge, with respect to both testing and design. The problem is then to select one, or at most a few tests, simple and accurate of execution, which may be considered a measure of the conformity of the product to an established standard.

Tensile and Fatigue Tests

In regard to possible tests, Mr. Schwartz said that many engineers have expressed themselves as being uninterested in the tensile strength of malleable iron castings which they buy, and it is probable that tests of the behavior of malleable castings under fatigue or impact would form a more direct measure of that material's utility. The Walker wedge test has found but little permanent favor and cross bend tests have been omitted from specifications in recent years in this country.

Tensile tests required on malleable have so far included only a statement of ultimate strength and elon-

gation, but recently there has come a demand for the inclusion of a figure for the yield point. Formulas have been proposed for calculating a so-called "allowable working stress" in terms of yield point and elongation. There is at least a theoretical foundation for the belief that extra quality malleable may be defined by specifications in terms of calculated working stress on equal terms with corresponding steel castings.

Discussion

During the discussion of this paper, Enrique Touceda, consulting engineer for the American Malleable Castings Association, expressed the opinion that the yield point can be obtained with a close degree of accuracy by the drop of beam method. He said also that surface shrinkage, tool lubrication and the concentration of slag were important considerations when considering the subject of machinability.

In a paper entitled "Resistance of Malleable Iron to Repeated Impact Stresses and Comparison of Strength of Machined and Unmachined Malleable Castings," Enrique Touceda, consulting engineer for the American Malleable Castings Association, reported comparative tests of malleable iron and cast steel bolster center fillers and discussed the tensile properties of rough, ground and machined test bars. Tests on the bolster center fillers revealed that the physical properties of the malleable iron were more consistent than was the case with the other metal. The deflection curves for the static tests showed that the deflection is about the same for both materials. The tendency for rivets to loosen was much more pronounced in the cast steel bolster fillers and under the drop test the deformation of malleable iron was less than that of the cast steel.

Mr. Touceda then pointed out that the tensile properties of test bars, either rough, ground or machined, corrected the old idea that, when the skin of a malleable iron casting is removed, it has lost its strength in large part.

Round Table Luncheon

Practice and results in the use of various fuels was an active subject at the round table luncheon on malleable foundry problems at which F. L. Wolf, technical superintendent Ohio Brass Co., Mansfield, Ohio, presided. Iron losses were given special attention and the statements of various numbers indicated that average losses ranged from 3.50 to 8 per cent. Powdered

coal had its inning when experiences were brought to light indicating that, by its use, savings are brought about in labor, cost of refractories based on a ton of melt and a closer adherence to melt schedules.

It was predicted that mechanical devices for firing would soon be used throughout the industry for the reason that labor, used in hand firing, is growing more difficult to get. Powdered fuel offers a solution to the drudgery of hand firing in hot weather and not only are heats brought up in less time by powdered coal, but they are more readily controlled both as to flame and temperature conditions. It was also pointed out that an extreme degree of fineness in the coal is

not essential and that, for the most economical operation as to refractories, furnaces should not be operated under a back or positive pressure.

Coal of high ash content is not barred from the field of pulverization, so long as the ash fuses at a high temperature. Considerable trouble has been experienced, due to high moisture content in the coal. Calculations made in the East show that coal may be expected to absorb 1.50 per cent moisture while in transit from the mine to point of use. One company stores its coal under cover in winter and thus avoids the added moisture content resulting from the accumulation of snow and ice on stock piles.

Permanent and Long-Life Molds

THE papers of the symposium on permanent and long-life molds, a feature of the technical programs, were all read before discussion on the subject as a whole took place. It was organized by Jesse L. Jones, Westinghouse Electric & Mfg. Co., Pittsburgh.

As an introduction to the general subject Dr. Richard Moldenke presented his paper on "Permanent and Long-life Molds," which summarized the principles involved in mold material selection for the various molten materials poured into them.

James A. Murphy came next with his paper on "Some Long-life Molds," in which he gave a description of shop experience with this type of mold construction which proved very effective in cost saving.

The paper by J. E. Hurst of Sheffield, England, on his "Method of Centrifugally Casting Pipe and Other Work," was presented in his absence by John Cameron of Scotland, head of the British delegation to the congress.

H. A. Schwartz, National Malleable & Steel Castings Co., Cleveland, then described his method of constructing and operating permanent molds in a paper going fully into the matter, and touching upon the possible development of the malleable casting process into a union of the two stages of making and annealing the work.

Leon Cammen, New York, delivered an interesting paper on the advances made with his process of using heated molds for centrifugal casting of pipe and other products of that class. He dwelt much upon the development of alloys of chromium, nickel-chromium and tungsten-chromium with iron, which would allow the pouring of molten steel into them when they are hot enough to prevent the too quick setting of this most difficult of all materials to form into serviceable castings in a permanent mold.

The chairman, Mr. Jones, then briefly described a contribution by Mr. Kabushiki Kaisha of Japan bearing upon the subject at issue. The Japanese are still using molds of sand-stone and other materials for making bronze and iron castings in large quantities. Chop sticks, spoons and other household utensils are

thus produced to the present day. More was promised for a future convention, with an exhibit of molds and product.

S. M. Udale, on behalf of himself and H. P. Kimber, then presented their joint paper on the "Holley Long-life Mold" and its present status in the field of production of huge quantities of duplication work. This is the coated mold, smoked with the acetylene flame before each pouring. The paper was illustrated by lantern slides showing the microstructure of the metal produced.

A short paper was then presented dealing with the advantages of using fused silica grains instead of sand, and binding these non-expanding grains with gelatinous silica obtained by acid precipitation. The advantages obtained by this departure would overbalance the cost of the fused silica, he claimed, particularly as this could now be made fairly cheap. Fused silica, it should be remembered, has the peculiar property of not going to pieces or cracking when made red hot and plunged into ice water.

Discussion

Only a short discussion followed the reading and presentation of the papers. W. D. Moore, American Cast Iron Pipe Co., Birmingham, Ala., desired more information on the Hurst process, which Mr. Cameron and Mr. Cammen gave, indicating that the process was in operation in England, and certain modifications also here in the United States under patents of Millspaugh. Mr. Moore also called attention to his development of the sand mold used centrifugally, stating that the difficulty from oxidation of the metal, formerly giving a poor-appearing interior of the pipe made by the sand-spun method, had now been successfully overcome. This was in reply to a criticism in Mr. Hurst's paper. Mr. Udale then extended an invitation to see the Holley process at the plant, and Doctor Moldenke, on request of the chairman, made some closing remarks bearing upon the unquestioned important future of the long-life mold.

Interest in Apprentice Training

WHETHER or not it is possible and practical to train apprentices for the foundry industry is answered by the statement that it is being done in many foundries. J. C. Wright, director of the Federal Board of Vocational Education, Washington, at a session devoted to apprentice training, said that in most cases where such training is given the apprentice comes in as an economic asset rather than a liability. The fear of the latter is one main reason, he said, why many employers have not adopted an apprentice training program.

Stress was put on the necessity of creating a conception of dignity in relation to foundry and other trades. The various types of vocational training, all-day school, evening school and part-time program, in which part of the instruction is obtained on the job and part in the classroom in an organized way, were discussed by Mr. Wright. A chart for measuring the efficiency of a vocational program was of interest. This chart permits of rating for the following ten fundamental characteristics.

1.—Instruction to be effective with vocational students must be given to selected groups.

2.—The subject matter to be taught must be such as directly functions in the work for which the pupil is being trained.

3.—Instructors must have been occupationally trained in the trade or occupation they are to teach.

4.—Individual instruction should be given whenever necessary to the progress of any member of the group.

5.—Each individual of the group should be permitted to progress as rapidly as his or her ability will permit, and promotions should be made at any time on the basis of ability to do the work required.

6.—Effective training for work can best be given on a real job.

7.—All subject matter and training should be arranged in the most effective instructional order of difficulty.

8.—The pupil, while being trained, should be placed in an occupational atmosphere and environment.

9.—The instruction and training should be based on prevailing occupational standards.

10.—Repetitive training in the various operations should be given such as will enable the learner to begin work as an economic asset rather than as an economic liability to his employer.

Training Secured by Lectures

A paper on "Apprentice Training Results Secured by a Lecture Course and Supervision," was presented at the same session by P. P. Ramp, foundry superintendent Newport News Ship Building & Dry Dock Co.,

Newport News, Va. The foundry and pattern shop apprentices at this large-work jobbing foundry are given weekly lectures on important phases of the work and are taught "the why" of everything they do. The good results in the training are attributed to the attitude of the foreman, the designing of equipment for the best production, and close supervision of the work of the apprentices.

C. J. Freund, apprentice supervisor of the Falk Corporation, Milwaukee, spoke briefly on what has been done in Milwaukee in training foundry apprentices. Good results have been achieved, he stated, because apprentice training has been taken seriously. The community has been impressed, he said, with the earnestness and seriousness of industry in wanting to train young men. There is still work to do in increasing the number of apprentices and in improving the training courses.

Community Training Plans

L. S. Harding, Associated Industries of Boston, outlined apprentice training activity in his district. In speaking of the community program, it was said that one man should have the responsibility of bringing the various viewpoints to a common meeting point. One plant in the Boston district plans to give intelligence tests and select candidates for apprenticeship only from the top quarter. George Hayes, director of education, Thornton High School, Harvey, Ill., outlined the community training plan of manufacturers at Harvey. John Ploehn, French & Hecht Co., Davenport, Iowa, contributed a paper outlining the intensive program adopted by the Tri-City Manufacturers Association. In Mr. Ploehn's absence, his paper was presented by G. R. Hamilton, foundry superintendent of the same company. H. A. Frommelt, consultant, International

Correspondence Schools, Scranton, Pa., was chairman of the apprentice training session.

Apprentice Molding Contest

Castings made in an apprentice molding contest were displayed during the convention at a booth in the registration building. The groups which held local contests were: Milwaukee Metal Trades Association; Quad City Foundries Association; New England Foundrymen's Association; General Electric Co., Erie, Pa., works, and Pusey & Jones Corporation, Wilmington, Del.

For the best steel castings, first, second and third prizes were awarded to C. Fuerst, Falk Corporation, Milwaukee; M. Rebheim, Bucyrus Corporation, Milwaukee, and A. Botteni, Falk Corporation, respectively. For the best iron castings, first, second and third prize winners in the order named were, Elmer DeWolf, J. R. Loveland, and F. C. Gillette, all of the General Electric Co., Erie, Pa.

Material used in apprentice training courses in a number of German plants was also on exhibit, the display being in charge of John Mehrrens, representing the German Foundries Association, Duesseldorf, Germany. A French foundry school display showing the progress of a special school for advanced training of foundry workers was also a feature. E. V. Ronceray, founder of the school, was present at the convention.

Foundry instruction in technical schools—particularly the courses given at the Carnegie Institute of Technology, Purdue University, the University of Michigan and the University of Illinois—were discussed at a dinner meeting held at the Hotel Book-Cadillac, Sept. 28. This meeting, attended by several educators, was presided over by O. W. Boston, engineering mechanical laboratory, University of Michigan.

Refractories for Foundry Furnaces

THE solution of the refractory problem in the foundry is not alone one of new and better refractory materials, but also one of improved design and methods of use. More failures can be attributed to abuse than to the character of the material. These facts, together with numerous tables showing service, design and records of performance of fire-brick construction, were reported by the sub-committee on the survey of conditions in the malleable industry at the session on foundry refractories. J. R. Allen, of the International Harvester Co., Chicago, presented this report.

Brick in Malleable Furnaces

The reverberatory furnace was declared to be at best an inefficient piece of equipment, and replies to questionnaires, covering 181 furnaces, indicate a wide range of results and operating methods. Furnace bottoms burned in for an hour or so before being put into service apparently give no better service than those carefully tamped, leveled off and protected from the initial charge. Front bridge walls should last at least 100 heats, whereas many foundries now obtain only 50 to 65 heats. Some reports indicate as high as 150 to 286 heats, and so reflect the advantage of improved practice.

Rear bridge walls should last at least one year. Blast erosion of furnace side walls can be reduced by the proper shaping of the tuyeres and by reducing the blast. The committee recommends only the regular 9-in. standard straights, large 9-in. straights, soops and splits for side wall use. A few foundries are using large tile brick over the skimming and sampling holes, and results obtained are satisfactory. From figures made available by the questionnaire, there is no advantage from the standpoint of greater refractory life of the side walls when firing by hand or with pulverized coal or oil.

Standardization of size and shape of tap-out blocks will benefit the refractory producer and consumer in lower costs to both. The committee recommends two tap-out blocks, one with a $\frac{3}{4}$ -in. hole for foundries using hand ladles and one with a 1-in. diameter hole for furnaces served with bull ladles. The outside

dimensions of the blocks should be $7\frac{1}{2}$ in. sq. by 9 in. long, with a suitable flare from the hole to the face.

Clamps holding the bung brick in place should not be tightened up too much at first, but should be followed up as occasion demands. A study of the information received indicates that bungs with the greater rise have the shorter life. Arch springs up to 1.5 in. per ft. have the longest life as measured by number of heats. The $13\frac{1}{2}$ -in. length of bung brick is recommended by the committee. It was suggested that further consideration should be given to fine and coarse ground flint fire clay brick, the committee having reached the conclusion that best results are obtained from the finer grinds.

Refractories in the Steel Foundry

The report of the sub-committee on a survey of the steel-casting industry was presented by C. N. Ring, assistant director of the Electric Steel Foundries Research Group. The report on the open-hearth furnace indicated that the roof of a basic furnace will rarely last over 400 heats, whereas the roof of an acid furnace may be depended upon for 1000 or more heats. The front wall is commonly made up of one or two layers of a neutral brick, such as chrome, to separate the silica and magnesite brick, but some melters claim that this is not necessary. Mechanical shock is not an important consideration in so far as the back wall (top hole side) is concerned, but that wall does have the same erosive tendencies as does the front wall.

The furnace should be designed with repairs in mind, and the side wall should be planned so that the bulkheads may be built up and protected as occasion demands. Direct impingement of the flame on the ports, end walls and in the uptakes considerably shortens the life of those areas.

Trouble with the bottom is not common if the hearth is properly sintered into place when originally built and if the material used is of the best quality available, the bad spots properly patched after each heat, the bottom dried out and the following heats properly handled. The life of the checker brick is con-

Three Other Authors of Papers



H. W. DIETERT



VICTOR M. MAZURIE



E. W. MCCULLOUGH

cerned chiefly with the design of the regenerator chamber. With good brick and proper arrangement, which eliminates the possibility of clogging by slag and flux particles, long life of the checker work may be expected.

Brick for Electric Furnaces

Requirements of electric furnace refractories are resistance to extremely high temperatures and the ability to withstand sudden cooling and reheating. A controversy still unsettled is that concerning heat conducting properties of electric furnace refractories. Some users recommend a heavy insulating lining to retain as much of the heat in the furnace as is possible, while others claim that high conductivity will increase refractory life sufficiently to offset the power loss thus encountered.

H. M. St. John, Detroit Lubricator Co., Detroit, read a preliminary report on the refractory problems in the non-ferrous foundry industry. In this field it appears that a high rate of production is favorable to long life of refractories provided that the material used is not exposed to a maximum temperature or fluxing action beyond its capacity. In certain furnaces the lining life is increased by melting charges of less weight than the rated capacity of the furnaces. Carefully preheating the lining is of great importance, particularly with hearth-type furnaces. Glazing the surface of the lining with a wash or slag is beneficial in the use of hearth-type furnaces and probably detrimental with pit-type furnaces.

The report of the sub-committee on standardization and simplification consisted of the outline of a plan which will be worked upon during the coming year.

Cost Committee Active

A SESSION devoted to foundry cost methods, held under the auspices of the association's cost committee with A. E. Hageboeck, secretary and treasurer of the Frank Foundries Corporation, Moline, Ill., and chairman of the committee, presiding, was well attended.

In opening the session the chairman stated that there is evidence that each year the foundryman is considering his costs more seriously, and that the association has reached a point where constructive work is possible. "The groundwork has been laid, and we are now ready to follow the work through," he said.

A Resolution

A resolution passed before the conclusion of the session, and sent to the board of directors, was as follows:

Resolved that it is the sense of this meeting that it is the function of the A. F. A. to proceed to develop a uniform cost system for the industry, and that the committee proceed to interest the foundrymen in their costs, preferably through the group method (that is, through local foundrymen's associations).

A standard definition of basic departments for uniform cost accounting was submitted by the committee for discussion. This schedule, which it is planned to publish in a forthcoming issue of *THE IRON AGE*, is regarded as the first step in establishing a simple cost system. The classification of departments covers malleable iron, steel, gray iron and non-ferrous foundries.

Favor Weights on Blueprints for Quotations

Expression of opinion on the matter of putting weights on blueprints for quotations was asked for by President A. B. Root, Jr., Hunt-Spiller Mfg. Co., Boston, during this session. A large number of question-

naires have been sent out by the Department of Commerce, and, although more than 90 per cent of the replies were in favor of the proposition, those opposing it included large and important companies. It was thought feasible, therefore, to bring up the matter at the cost session in order to determine sentiment for or against modification of the original proposition. Opposition to the proposition as expressed in replies to the questionnaire seemed to be due for the most part to belief that frequent changes of patterns would entail increased clerical expense on the part of the purchaser of castings. After considerable discussion, a resolution favoring the placing of weights on blueprints was passed.

Weight Guessing Contest

A weight guessing contest, arranged by the cost committee for the purpose of interesting foundrymen in the need of an adequate cost system, was a feature as at last year's meeting. Five patterns for making malleable, steel, gray iron, brass and aluminum castings, respectively, were on display at the committee's booth and prizes were awarded to the foundrymen guessing nearest to the actual weight of castings produced from these patterns. Foreign delegates were among the large number participating in the contest.

The actual weight of the malleable casting, 20 lb., was guessed by Alfred Simon, Crunstadt, Germany; J. Prendergast, Sullivan Machinery Co., Claremont, N. H.; F. A. Cowen, Warner R. Thompson Co., Detroit; H. W. Clark, H. W. Clark Co., Mattoon, Ill., and C. P. Ziegler, Grand Rapids Foundry Co., Grand Rapids, Mich. The winner was chosen by drawing, C. P. Ziegler being awarded the prize.

George C. Johnson, Johnson Foundry Co., Los Angeles, and John Caswell, Chamberlain Co., Los Angeles,

guessed nearest the actual weight of the brass casting, 38 lb., Mr. Caswell winning the prize as a result of the draw.

Leonard Pitt, Carborundum Co., Niagara Falls, N. Y., guessed within $\frac{1}{2}$ lb. of the actual weight, 200 $\frac{1}{2}$ lb., of the gray iron casting, and E. G. Weghorst, Simons Paint Spray Brush Co., Dayton, Ohio, was within $\frac{1}{2}$ lb. in his estimate of the weight, 143 $\frac{1}{2}$ lb., of the steel casting. The prize for correctly estimating the weight of the aluminum casting went to A. P. Grim, A. P. Grim Foundry Co., Bound Brook, N. J., who guessed within 1 oz. of the actual weight, 100 oz.

Variations in estimates submitted in the contest ranged as follows: Malleable casting, 4 $\frac{1}{2}$ to 47 lb.; brass, 7 to 85 lb.; gray iron, 28 to 382 lb., and steel casting, 78 to 319 lb.

One of the two papers presented at the cost session is given below.

Cost System for Small Foundry

At least two-thirds of the jobbing foundries of the country do not know where they are making money, if they happen to be making some, or where they are losing money, and to what extent, when their profit and loss account shows in red, said Robert E. Belt, secretary and treasurer, American Malleable Castings Association, Cleveland, in a paper on "Foundry Cost Accounting."

"Evidently, therefore, at least two-thirds of the

jobbing foundries do not know when they quote on work whether or not they can reasonably expect a profit on it. They do not know definitely on what lines or what kind of work they have been able to make a profit in the past. In the absence of an adequate knowledge of costs, they have no experience to guide them and their balance sheet at the end of the year usually reflects the results."

To determine the production cost of a casting with reasonable accuracy is not difficult nor expensive, stated Mr. Belt. The reason why many foundrymen consider foundry cost accounting intricate and expensive was said to be because in many offices there is a great deal of wasted effort; records are not properly related; the cost, time and bookkeeping departments are performing separate operations and making duplicate entries. An accounting plan should be designed with the same precision as a machine, to accomplish as a whole a certain thing. Unless records are related and the needed information gathered efficiently there is the appearance of red tape and questionable benefits.

The object of Mr. Belt's paper was to demonstrate a method of gathering foundry costs where the records are related, and which experience has proved practical and efficient. The cost procedure set forth is designed primarily for gray iron foundries of the smaller size. The forms used in this cost procedure were illustrated and discussed. The paper was received with much interest.

Second International Foundry Congress

NOTABLE success attended the second attempt to bring together the foundrymen of various countries. The second international foundry congress, which was part of the larger convention and exhibition last week, exceeded in attendance and in enthusiasm the expectations of many of its promoters. Over 135 foreign foundrymen from at least 10 different countries entered into the activities of American foundrymen in their annual convention and exhibition, either as contributors of papers, leaders in technical discussions or eager visitors at the various equipment displays and Detroit foundries.

The chief distinctly international events were the official exercises opening the congress, the two sessions in French and German and the banquet. Many of the technical sessions were international in character because of the foreign papers and discussions.

AN outstanding feature of the convention, as stated, was the presence of the foreign foundrymen who came overseas to join with their American brethren in the second international foundry congress.

How the Congress Originated

For a number of years previous to the World War, activity in fostering international relations between foundrymen was confined to the committee on cast iron of the American Society for Testing Materials. With the suspension of this work and the manifest impossibility of reviving the international association for testing materials in its old form with the former membership, an opportunity came to the American Foundrymen's Association to initiate a separate movement of this kind with European foundrymen. Through the able efforts, particularly of H. Cole Estep, satisfactory relations were established which resulted in the invitation of foundrymen by the French association to what was the first international foundrymen's congress, held in Paris in September, 1923.

The splendid reception of the American delegates to the Paris Congress everywhere on their European tour, and a realization of the good that could be accomplished by such international foundry gatherings, prompted the American Foundrymen's Association to invite the foundrymen of all countries to participate in a second congress, to be held in conjunction with their thirtieth annual convention in Detroit. The response to this invitation was gratifying, for many delegates from 10 foreign countries graced the occasion. They

came from Great Britain, Germany, France, Belgium, Italy, Spain, Sweden, Norway, Holland and Switzerland; with individual foundrymen also from Denmark, Czechoslovakia, Luxemburg, Canada and other countries. Welcomed in New York by the officials of the A. F. A. and a local committee, and similarly received in Philadelphia and Buffalo, the party, after leaving Detroit on Oct. 3 for a daylight ride to Chicago, and being received by a committee there, is going for similar visits to Cleveland, Pittsburgh, Washington and back to New York for embarkation on Oct. 14.

The greatest generosity was manifested in opening plants for inspection of the visitors and, as this spirit does not exist to the same extent on the other side of the water, they were more than delighted. This visit to America will do much to break down the barriers of secrecy, and American visitors to European industrial establishments will hereafter undoubtedly see more of European foundries and manufacturing plants.

A summary of the foreign language sessions during the congress will be found on other pages. In these sessions free expression was voiced by the delegates regarding their impressions and differences between our practices and theirs. A comparison of economic conditions, a willingness to join with us in international committee work, an interchange of information through papers and personal correspondence and, most of all, a profound gratitude for American hospitality, which they found unbounded, spontaneous and coming from the heart, were also indulged in. Indeed, the German delegation, after assuring themselves of acquiescence on the part of their British and French confrères, presented an invitation for a third foundry congress to be held in Düsseldorf in 1929, and have already initiated steps to combine this with a great exhibition of foundry machinery, products and educational displays.

Official Opening of the Congress

THE official opening of the congress was interesting and impressive. Previous to this, the heads of the several delegations were entertained at luncheon on the fair grounds, and taken in a body to a specially constructed platform at one end of one of the exposition buildings. Here the congress and convention of the A. F. A. jointly, were declared opened by Pres. A. B. Root, Jr., who in chosen words welcomed the delegations and offered every opportunity and service on behalf of the association to make the gathering one of the greatest usefulness to the industry in a truly international sense.

The address of the president was followed by a welcome by the governor of Michigan through his personal representative, Harvey J. Campbell, who called attention to the magnitude and importance of the foundry industry so far as Michigan was concerned, and in particular to the automobile industry, specially centered in the city of Detroit. The mayor of the city was unable to be present. Later in the week he came personally to the banquet to extend welcome and greetings to the congress and convention. Robert Crawford,

president of the Atlas Foundry Co., Detroit, as general chairman of the Detroit committee, welcomed the assemblage in a few chosen words of greeting, thus concluding the welcoming addresses.

Response was then made on behalf of the foreign delegations in both French and German, and the individual heads of delegations introduced to the audience. The meeting was then adjourned, and the several sessions simultaneously opened for the reading and discussion of papers.

Conferences in German and French

ASIDE from the introductory exercises officially opening the second international foundry congress on the first day of the convention, there were only two meetings which assumed a distinctly foreign flavor. On two afternoons during the week there were informal sessions for those who could speak French and those who could converse in German. Both of these were highly interesting and profitable to the foreign visitors. The French session was presided over by Robert Ronceray, son of Eugene V. Ronceray, one of the prominent delegates from France. Dr. Richard Moldenke conducted the session in German, at times interpreting in English for the benefit of those present who did not know German, some of the important points which were under discussion. An account of some of the features of these two meetings follows.

The German Session

The purpose of this meeting was to afford the German speaking delegation and American foundrymen familiar with that language an opportunity to exchange information, ask each other questions on foundry prac-

GROUPS of interested foreign visitors were noted in eager conversation in their own language. Many enthusiastically seized the generous offers of foundries and other plants to inspect their operations. In many instances, expressions of admiration and wonder were sincere.

AN enthusiastic and interesting foreign visitor was Morton Grindel of Bergen, Norway. His spontaneous admiration of all he was seeing was marked. Particularly impressive to him were the operations at the River Rouge plant of the Ford Motor Co. and the methods used in making malleable castings at one of the large Detroit plants. Mass production at high wages elicited his enthusiastic comments.

tice and facilitate the introduction of new methods abroad and here. Practically all the visitors from Germany, Holland and Switzerland, and a number of American foundrymen were present and thoroughly enjoyed a three hour active conference in which all manner of foundry problems were discussed and the newest German developments brought out. They were given information concerning cases where the operations they saw in American foundries were widely different from their own, and the necessities of quantity production demanding big machinery installation were pointed out. Among the many points discussed were the following:

Hot Iron from Large Cupolas—The visitors wondered how we can get intensely hot iron from our very large diameter cupolas. It was explained that this was possible through generosity with the fuel used and careful operation in the charging and melting procedure. Europe uses comparatively small cupolas, 36 in. being about the standard diameter inside the lining and where required there may be a dozen cupolas installed, with half of them active at one time.

Steel in the Cupola—Inquiry was made as to the use of steel in the cupola, which is now also much in vogue in Europe, but in a somewhat different manner.

We use from 5 to 40 per cent steel in extreme cases, and this is now a regular procedure here. The tendency in Europe is for higher percentages—even up to 80 per cent, but with most careful charging in their smaller cupolas, so that a total carbon content as low as 2.40 to 2.60 per cent is obtained. This requires much superheat to pour off successfully, and the silicon is kept up to the higher levels by charging the so-called "Packets" of ferrosilicon with about 15 per cent cement, made up in briquette form.

Briquettes of Ferroalloys—This question of ferroalloy briquettes was gone into and it was stated that when the alloys are thus protected from oxidation until they get down and melt with the metal charge there is no loss whatever. Indeed, it was claimed that the "packets" actually got down past the melting zone untouched, and dissolved in the liquid metal in the crucible of the cupola. This statement was questioned by others present as impossible, since only molten material could get by the coke bed below the tuyeres, this coke not being consumed at all. The matter serves, however, to show the best way to add silicon, manganese, nickel, etc., when it is desired to have no oxidation loss of any account and not to cool metal after tapping out, when using the ferroalloys in foundry practice. Whether this method will appeal to American foundrymen remains to be seen, as they prefer to purchase their silicon and manganese in the pig. Where, however, such metals cannot be had in the pig irons it should be worth considering.

Disposing of Borings—Disposition of borings was considered, in view of their use in one of the great Detroit foundries. While the latest method of "hot briquetting" the borings in which clean borings are shot directly from the machines to a heating cylinder provided with rich coal-gas firing, and the red hot borings promptly put under the steam hammer to make comparatively thin cakes, gives excellent results when but 5 to 10 per cent of such briquettes are used in the mixture, nevertheless the method is losing favor generally because all such extra-foundry operations complicate production. It was, therefore, considered best to send the borings, shot and fine material of the foundry directly into the blast furnace, as the best solution of the situation.

The Wuest Furnace—The Wuest furnace came in for considerable attention. This is an oil-fired air furnace with a shaft at the end in the shape of a cupola. Metal is charged into this shaft, through which the waste gases ascend, and these gases are then passed

TOWERING above many of his comrades was the impressive figure of Dr. Ing. Gerlenkirchen, managing director Verein Deutscher Eisengiessereien, Duesseldorf, Germany. His keen interest and admiration for much that he saw was evident.

AN interested spectator was Prof. Paul Oberhoffer, metallurgical department technical high school, Aachen, Germany. Leaving the group which arrived in New York, Sept. 20, he spent the previous week in Chicago at the convention and exhibition of the American Society for Steel Treating.

Foreigners Contribute Valuable Papers to Technical Programs



DR. E. PIWOWARSKY

Metallurgical Practices in Europe Are Interestingly Described



ALBERT PORTEVIN

Experience and Background of Principal Speakers Cover Broad Field



AUGUSTA-EUGENE LE THOMAS

PROF. E. PIWOWARSKY, who presented a paper on behalf of the Verein Deutscher Eisengiessereien (Association of German Foundries), occupies the chair established at the technical high school at Aachen, Germany, for the advancement of metallurgical education. He has conducted extensive research into the conditions of manufacture of the higher grades of cast iron, which were dealt with in his paper.

ALBERT PORTEVIN, professor at the Ecole Supérieure de Fonderie in France, has done a large amount of work in the study of steel and its heat treatment and has conducted extensive investigations of pig iron and foundry practice. He is now serving as a consulting engineer. He was inspector of war material during the war and now devotes some of his time to supervision of the metallographic laboratories of the Ecole Centrale. He is the author of more than 150 papers on technical subjects.

AUGUSTA-EUGENE LE THOMAS, who presented a paper on behalf of the French Technical Association, studied engineering at the French Government school which trains artillery officers and engineers. Although still a young man, he has achieved a great deal in scientific and technical work. Since the war Mr. Le Thomas has devoted his attention to the study of testing and specifications and has made investigations which have resulted in the drafting of new specifications adopted by the French Navy.

IVAN LAMOUREAUX, author of the paper presented by the Association Technique de Fonderie de Belgique, is the son and grandson of foundrymen. Pre-

vious to the war he was managing director jointly with his brothers of the foundry of Lamoureux Frères. After the war, he undertook the manufacture of foundry equipment, which industry he is still conducting. He is vice-president of the Belgian association and manager of the Belgian *Revue de Fonderie*.

J. E. HURST, a well known English metallurgist, read a paper on permanent and long-life molds at the symposium on that subject last week. Mr. Hurst is connected with the Newton-Chambers Co., Ltd., Sheffield, England. He is joint inventor of the Hurst-Ball centrifugal process.

DR. V. JARES, representing the Czecho-Slovak Foundry Association, was the author of a paper on the composition of aluminum-zinc-tin alloys. He is a graduate in chemistry and mechanical engineering. Since 1921 he has been professor of metallography and physical tests at the polytechnic school of Prague, and since 1924 he has been president of the section for physical tests of metals of the Czecho-Slovak Technical Foundry Association.

P. CHEVENARD is consultant for the Societe Com-mentry-Fourchambault et Decazeville and the Acieries d'Imphy. He is professor of metallurgy at the Ecole des Mines de Saint-Etienne and at the Ecole Supérieure de Fonderie of Paris. He is the inventor of several kinds of testing apparatus, including the differential dilatometer, a recording instrument for the study of pig iron composition. He has done work in the investigation of special alloys. He is the author of numerous technical papers.



IVAN LAMOUREAUX



J. E. HURST



DR. V. JARES



P. CHEVENARD

TWO foreign visitors who were of unique interest were T. J. Brons and his sister, Miss Brons, from Appeingedam, Holland. Mr. Brons is one of the official delegates from the cooperative society of Dutch iron and steel founders and they both speak good English. They expressed their admiration for much they had thus far seen, this being their first visit to America. Miss Brons is a chemical engineer and refused most of the program for ladies entertainment, spending her time visiting foundries and other plants.

over a series of calorized steel tubes through which the blast to burn the oil is forced. Thus oil is burned with hot blast instead of cold air, and an intense combustion effected. The metal melted continuously from the cupola shaft runs into the air-furnace hearth, is highly superheated and is tapped ladle for ladle, as desired. Thus a continuously operating air furnace is had. Statements were made that the degree of superheat attained gave metal having a temperature of over 3000 deg. Fahr., and, when such intensely hot metal was allowed to cool to normal pouring temperatures, wonderfully good cast iron resulted. Unquestionably there must be a reaction at such high temperatures between any dissolved iron oxide and carbon—not easily effected at ordinary melting temperatures; as otherwise much bad work would be produced.

It was pointed out by Doctor Moldenke that the only serious criticism of the Wuest furnace would lie in the use of oil as fuel. As oil contained a heavy percentage of hydrogen in its composition, steam would be formed which, impinging upon red hot and melting iron in the cupola stack, would mean tremendous oxidation, as it would in effect be the well-known hydrogen process of passing steam over red hot iron. By substituting coal gas made by the slagging producer—which has below 1 per cent hydrogen—this oxidation would be avoided. These very high superheat temperatures give a new line of attack on the problem of producing high test cast iron.

Reducing the Sulphur Content.—Desulphurization of cast iron has entered a new phase with the discovery that jolting a ladle severely and rapidly will cause half of the sulphur content to rise and be capable of removal by skimming. Evidently it is as manganese sulphide that this separation occurs. Jolting is done at the rate of 100 blows a minute with a movement of 1½ in. It developed that about five minutes of jolting gives the best results. Since this cools the iron considerably, a new method has come forward in which the ladle is swung around 180 deg. back and forth. This is said to cut the time very materially, and thus still deliver hot iron. More attention is paid to the slag of a cupola in Germany than there, the aim being to get this light in color, very fluid, easily and continuously flowing from the slag-hole. Several methods have been worked out by which slag is drawn off into chambers built behind the cupola and connected with it so that cupola and chamber are under the same blast pressure, thus allowing the slag to flow without spattering.

Scrap in Blast Furnaces.—The question of using scrap to excess in blast furnaces making foundry iron has solved itself in Germany—scrap being too dear. Hence such furnaces have discontinued using cast iron

RAYMOND HENRY, chief engineer of one of the departments of the Soc. An. Ougree-Marhaye, Rodange, Luxemburg and one of two from that country in the party was eagerly absorbing information concerning American methods and processes. Being obliged to conduct nearly all his conversation in French, he was observed talking frequently with French Canadians who often acted as interpreters.

or steel scrap in the burden. Nevertheless, a joint committee of furnace and foundrymen are at work studying the question. In general, the German foundrymen's associations desire to cooperate with us and all other nations interested in foundry advance. They would be of much assistance with the subject of molding sand, on which they have a technical committee at work; and the international export test bar would be of much importance to them, as they are an exporting nation of the first rank. Steps have been taken to arrange for their participation by a representative on the international test bar committee.

Cupola Linings.—As to the use of ganister cupola linings, rammed in when lining up, and in patching after a heat, experience has shown that the results are so good that but few fire-brick will find their way into such repairs hereafter in Germany. The material (called "Stampfmasse") is a ganister, or silicious mass with 94 to 96 per cent silica, and bonded with clay. This is made into a stiff paste, thrown in and rammed up with an air rammer, having a pene-point into the space between shell and a removable form giving the lining contour. Uniformly hard blows must be given, so that the mass becomes equally dense all over. Holes are then punched into this lining right through the mass at close intervals—say ¼ in. in diameter and distant an inch and a half from each other. This allows a thorough drying of the material and also counteracts the terrific expansion when under full heat. Cases have been known when heating up such a lining that double riveted seams of the cupola

GENUINE appreciation of the welcome and hospitality of American foundrymen and others was voiced by S. H. Russell, vice-president, Institute of British Foundrymen, and one of the official British representatives. He is a partner in S. Russell & Sons, Bath Lane Foundry, Leicester, England. The hospitality has exceeded all preconceived expectations, high as these were. Mr. Russell is specially interested in castings for small machine tools and will visit plants in Cincinnati this week, after being conducted through the Stromberg company's carburetor plant in Chicago. He regrets that so little can be seen in the four weeks available for the tour of American plants. His first visit to America has stamped upon him a deep impression of the magnitude and diversity of operations here and the distances to be covered. His most vivid recollection of the exhibition is its size and especially the really great amount of foundry equipment in operation.

have been torn apart. Into this mass it is advisable to work in pieces of silica rock of hazel-nut size. This reduces a volume change and cheapens the material.

Comparing Molding Methods.—Molding was much discussed, it being the almost unanimous opinion that European workmen could not, or at least would not, put up the work done here. To offset this, however, one of the visitors gave figures from his personal memoranda, that in his works he got up to 240 small snap-flask molds per man in the usual 8-hr. day from some of his molders. Our molding systems were much admired and commented upon. Stress was laid more particularly upon the general desire to get good molds, small scrap percentages, and the highest grade of metal possible. The rather interesting consensus of opinion on the part of our German visitors, that they found our castings to be of higher grade and better looking than theirs, was met by the American rejoinder that we found when we visited their foundries that their castings were of higher grade and better looking than ours. So both interests were satisfied.

In concluding the meeting, high praise for the unbounded courtesy of American foundrymen, and the American people in general on the occasion of this visit, toward their German guests was expressed by the heads of the delegations of the two German Foundrymen's Associations—the owners' and the engineers'; and the

TO maintain friendship and to cement such friendship, it is necessary to travel and meet the peoples of different countries. I have been in Egypt, Russia, France, Germany and India. We were told that our reception in America would be splendid. But I find that you are a far finer lot than I imagined. We are glad to admire, love and appreciate you and this we can now do better than if we had not come. You have already made an impression on every one of us and we have made many new friends. We extend our special thanks.—From the speech at the banquet by John Cameron for the overseas delegations.

general wish of all expressed that return courtesies might be given their American foundry friends in 1929 in Düsseldorf, if possible, combined with a third international foundry congress.

The three hours spent in those discussions appeared so profitable to our guests that they unanimously requested Doctor Moldenke to meet them again at the close of the American trip, to go over additional points in American foundry practice that might be encountered in the meantime.

The French Session

French and Belgian delegates, and those foreign visitors familiar with the French language, met one afternoon to discuss points of mutual interest gathered during their stay thus far in the United States and at the exhibition. Walter Wood, of R. D. Wood & Co., Philadelphia, was present as the courtesy representative of the A. F. A. An interesting feature of the meeting was an opening address delivered by C. H. Gale in French. Mr. Gale is a retired citizen of Detroit and one of the pioneer foundrymen of the country, having at one time been connected with the Michigan Malleable Iron Co. of Detroit. He has trav-

DR. MOLDENKE was in his element when conducting the session for German visitors. So successful was that gathering that a spontaneous demand for another in Pittsburgh or New York may be complied with and one arranged. Robert Ronceray, son of the famous E. V. Ronceray, was the guiding spirit of the session in French.

eled extensively in Europe and has become familiar with several languages. As a result of this he was able to present in French an entertaining and instructive picture of the founding of Detroit by French colonists in 1701. He drew a picture of those early years and traced some of the influences of the early French settlers on the growth and development of the city. The name of the city comes originally from the French.

Under the able chairmanship of Robert Ronceray, for the past two years employed in one of the foundries of Detroit, nearly three hours were consumed in the comparison of notes and the ironing out of impressions obtained by the various French and Belgian delegates. There was also a considerably large amount of information exchanged. There was a general expression from many of those present of extreme pleasure with the graciousness of the reception accorded by Detroit and American foundrymen. Frequently the hope was voiced that there shall be continued interest in future international foundry congresses.

The Banquet Was International

INTERNATIONAL in its flavor and colorful in its effect was the annual banquet Thursday evening. Nearly 600 foundrymen and their ladies and guests from many lands were served in the ballroom of the Hotel Statler.

At the speakers' table, back of which hung the flags of the nations represented, were seated most of the official representatives from abroad—12 in all, four from

Great Britain, two from France, and one each from Belgium, Germany, Italy, Holland and Spain. During the post-prandial exercises, in response to an introduction by H. Cole Estep, chairman of the committee on international relations, each one rose as his name was called and was greeted by those at the tables standing in welcome.

A most appropriate and sincere response on behalf of the overseas delegation was made by John Cameron,

O. NAGEL, general manager Badische Maschinenfabrik, Durlach, Germany, was particularly interested in the exhibits of molding machines and sand blasting and handling equipment. He reported that the design of the corresponding German equipment was quite different. This is not his first visit to America and his English is excellent.

past president Institute of British Foundrymen and managing director Cameron & Robertson, Ltd., Kirkintilloch, near Glasgow, Scotland. Some of his sentiments appear on another page.

Another feature, each year a regular one, was the public presentation of the Whiting, Penton and Seaman gold medals. These were bestowed this year on three foreign foundrymen in recognition of their contributions to the foundry industry. They went respectively to Eugene V. Ronceray of France, John Shaw and Thomas Turner of Great Britain. Photographs and something of the careers of these men were published in THE IRON AGE, Sept. 2. The presentations were made by L. W. Olson, chairman of the board of awards and past president of the A. F. A. Appropriate responses, expressing appreciation of the honors, were made personally by Mr. Shaw and Mr. Ronceray. The son of Professor Turner, Henry Turner, a professor in the University of Birmingham, England, accepted the medal for his father.

The new officers for the ensuing year, S. W. Utley as president and S. L. Johnson as vice-president were formally introduced.

A. B. Root, Jr., who, as president for the past year, presided at the banquet, referred in his opening address to the first convention of the association which was held in Detroit 30 years ago or in 1896. Drawing some contrasts between then and now, he emphasized especially the extent to which scientific control is now a factor. Even 15 years ago there was almost no such control of metal mixtures, sand or molding operations and even no chemists.

The chief speaker of the evening was Charles F.

JOHN SHAW, who contributed an exchange paper at one of the sessions in gray iron, was in attendance at most of the three sessions and took an active part in the discussions. His keenness and the authority with which he spoke were appreciated.

Kettering, vice-president and general director, research laboratories, General Motors Corporation, Detroit, who delivered one of his characteristically effective ad-

resses on scientific research as a profession. Several of the foreign delegates were enthusiastic in their commendation of his treatment of the subject.

Exhibition Notable in Size and Quality

WITH 270 exhibitors occupying 82,000 sq. ft. of floor space, the exhibition of foundry equipment and supplies in connection with the Detroit convention broke all previous records for size. Last year at Syracuse, N. Y., there were 184 exhibitors. The average floor space occupied during the past six years has been 57,200 sq. ft.

The attendance was large and the interest shown was gratifying to the exhibitors. From the standpoint of quality, diversity and interesting features, it was the consensus of opinion that this was the best one that has ever been held. The displays occupied three large buildings on the Michigan State Fair Grounds, conveniently located, well arranged for exhibition purposes and but a minute's walk from the buildings in which the technical sessions were held.

ONE of the outstanding features was the attention given to conveying and other equipment for handling sand and molds and designed to reduce the item of labor in the foundry. Molding machines have been developed into such highly efficient, rapid production units that it has frequently been stated that they are in advance of the handling equipment that serve them or, in other words, that their productive capacity is so large that the facilities for supplying them with sand and for carrying away the molds are not sufficient to allow the machines to be kept in continuous operation at full capacity.

The exhibit of molding machines was large and included all types, but nothing radically new was shown in molding machine design. However, during the past year refinements have been added to many of the machines.

Sand Handling and Treating

Considerable progress during the year was indicated in both sand handling and sand treating. That considerable attention has been given to sand control was also evident. Mold conveyors were a more conspicuous feature than heretofore and it was the first exhibition at which power-driven mold conveyors were shown in operation. More continuous molding units were shown than heretofore. One manufacturer exhibited in operation a complete continuous molding unit that included a mold conveyor, sand treating and handling equipment operating with a cope and drag molding machine with automatic delivery of the drag flask from the molding machine to the mold conveyor. Molds were produced at the rate of one per minute. A ram delivered the flasks from the mold conveyor to a jolt-type shakeout machine which shook out the mold without the removal of the cope. Connected with this unit was equipment for delivering the sand into an overhead bin from which it was discharged into a flask by an automatic gate that measured the amount of sand required. Another manufacturer showed three molding machines with bucket type elevators for delivering the sand to the flask.

Foreign Exhibitors

The international character of the convention was also reflected at the exposition, as there were two interesting exhibits of equipment by German manufacturers and a third by an English company. One German exhibit was an unique sand-throwing molding machine in operation. In this the sand is shoveled to a conveyor, which is equipped with a magnetic separator. The conveyor delivers it to a motor-driven revolving blade impeller which throws it about 12 ft. through a housing that is nearly vertical, and from the top of this housing it falls through a chute to a second impeller head which throws the sand with great

force into the flask. The impeller also performs the functions of conditioning, mixing and aerating the sand. The same machine was also shown without the second or molding impeller head for use for throwing sand to overhead bins.

In another German exhibit was a portable sand separator and blender in which the sand is elevated by centrifugal force. The same company also exhibited a core box draw machine.

A semi-automatic, universal wood milling machine for use in pattern making was shown by a British exhibitor.

One of the more recent developments in the foundry field is sand reclaiming, and equipment for reclaiming was shown for the first time, one manufacturer exhibiting a complete sand reclaiming unit. The used sand, after passing through the shakeout, goes over a magnetic separator into a storage bin, then to a crusher, and from there to a mixer. The reclaimed sand, after leaving the mixer, is discharged into a storage bin and the material that has no value is collected in a dust arrester.

A new machine for controlling the moisture in foundry sand that was shown in the form of a laboratory model attracted attention. The sand is sprayed with water as it passes over a belt and an automatic control regulates the flow of water according to both the mixture and amount of sand passing over the belt. One machine not heretofore shown was a continuous sand blender with a capacity of 20 tons per hr. The display of mechanical vibrating screens was unusually complete and included some new types. There was also an extensive display of sand cutting machines.

Several manufacturers had large exhibits of sand blast and dust arresting equipment. These included little equipment of a new type, although new features and refinements had been added to some of the sand blast equipment. One display was a complete system for handling castings from the shakeout to the boxes, a crane delivering the latter to the sand blast barrel.

Permanent molding was demonstrated for the first time at a foundry exposition. This was an operating exhibit, the molding machines making gray iron castings for exhaust manifolds and carburetor bodies in air-cooled permanent molds. The iron was melted in a 500-lb. electric furnace.

Variety of Material Handling Equipment

The wide range of material handling equipment emphasized the increasing importance of the problem of material handling in a foundry as a factor in economic operation. The display of trucks appeared larger than at previous shows and there was a wide range of different types of trucks and bodies for different uses. One builder of overhead handling equipment showed a monorail track with an automatic scale for weighing coke, castings and other material while being conveyed along the track. Cupola charging machines were exhibited by two manufacturers with the use of models of sections of cupolas so that the method of operation was clearly shown.

There were several displays of grinding machines, and pneumatic and electric tools were shown in great profusion. This was true also of cutting and welding apparatus. The display of electric furnaces for melting non-ferrous metals included many units. There were large exhibits of foundry flasks and other metal products that find a place in the foundry. There was a good display of wood-working machinery for pattern shops. There was an increasing interest in exhibits of roller and ball bearings and the display of cranes and other equipment provided with these types of bearings.

Foundry supplies were a large and important part of the exhibit. Among these were charcoal briquettes,

shown by a leading automobile manufacturer, the briquette being a by-product of waste wood.

Educational Exhibits

Several interesting educational exhibits were shown in a separate building under the auspices of committees of the American Foundrymen's Association. To show the need for simplified practice in the matter of foundry refractories, eight stopper rod assemblies of

different sizes and types from that number of manufacturers were shown as well as 40 stoppers, sleeves and nozzles in many types made by a single manufacturer. Blue prints showed a great variety of tap-out blocks and bung brick.

There was also an exhibit by the molding sand research committee and the National Safety Council. Details of the exhibits of each company were published in *THE IRON AGE*, Sept. 16.

Institute of Metals Holds Important Meetings

THE meetings of non-ferrous foundrymen and metallurgists are always an important part of foundry conventions. The institute of metals division of the American Institute of Mining and Metallurgical Engineers held two joint sessions with the A. F. A. as well as one session of its own. There was also a round table discussion on brass foundry topics as well as a dinner. The attendance in general was large, reaching about 100 at some sessions.

Symposium on Temperature Determinations

The feature among the sessions was the symposium on temperature determinations in the non-ferrous foundry. Six papers were presented, four of them by

operating men in various plants and two by representatives of instrument making companies.

The four papers emanating from actual experience in various foundries were:

"Thermo-couple for Ladle Temperatures of Brass," by A. A. Grubb, L. H. Marshall and C. V. Nass, Ohio Brass Co., Mansfield, Ohio.

"Temperature Control in the Brass Foundry," by H. M. St. John, chief metallurgist Detroit Lubricator Co., Detroit.

"Temperature Control in Aluminum Foundries," by Kirtland Marsh, Aluminum Co. of America, New Kensington, Pa.

"Visual Judgment of Non-Ferrous Metal Temperatures," by R. R. Clarke, alloy foundry, General Electric Co., Schenectady, N. Y.

Officers and Directors for the Ensuing Year

President—S. W. Utley, vice-president and general manager Detroit Steel Castings Co., Detroit.

Vice-President—S. T. Johnston, vice-president and general manager the S. Obermayer Co., Chicago.

Directors for Three Years—Martin W. Henley, vice-president Frazer & Jones, Syracuse, N. Y.

N. K. B. Patch, secretary and works manager, Lumen Bearing Co., Buffalo. A. B. Root, Jr., mechanical engineer, Hunt-Spiller Mfg. Corporation, Boston. S. C. Vessy, president W. W. Sly Mfg. Co., Cleveland. L. C. Wilson, vice-president and general manager Federal Malleable Iron Co., West Allis, Wis.



S. W. UTLEY



A. B. ROOT, JR.



S. T. JOHNSTON



M. W. HENLEY



N. K. B. PATCH



S. C. VESSY



L. C. WILSON

Space does not permit an abstract of these interesting papers. The first paper describes a modified thermo-couple, developed by the Ohio Brass Co., which makes it "possible to measure quickly and accurately the interior temperature of the metal in the ladle and can be successfully used with unskilled help on temperatures up to 2300 deg. Fahr." As many as 800 immersions have been possible with one thermo-couple.

Pyrometers in Brass and Aluminum Foundries

H. M. St. John in his paper discusses the methods of using pyrometers in a large production brass foundry and favors the use of the exposed couple because of its speed. The disadvantages and the precautions attending them are also gone into. He states that pyrometers at present available, although far from perfect, are entirely practical and can very profitably be used in almost any brass foundry.

Why close control of the melting and pouring temperature in an aluminum foundry is so essential and what results may be expected of good pyrometric equipment properly installed, maintained and used is set forth in the paper by Kirtland Marsh. Detailed descriptions of a few special features such as the asbestos insulated quick reading couples, the special wiring diagram of an indicating pyrometer installation, pyrometer tube and holder are included. The make of instrument to be used must be decided by the purchaser, he says.

Judgment by the Senses

A very interesting presentation was that of R. R. Clarke who ardently insists that the determination of liquid metal temperatures is a product of the senses collaborating with judgment—sight and touch or feeling. He contends that proper temperature is a matter of judgment derived from the size, the bulk, the section of the casting to be poured and that the manifestations of the metal at that temperature call into play both the senses and the judgment and involve their concerted activity. Mr. Clarke does not think pyrometers essential.

In the discussion N. K. B. Patch, the chairman, said that both the practical man and the pyrometer are necessary and Mr. Clarke added that 90 per cent of the judgment made in foundries today is based on color.

The two other papers at this symposium were:

"Pyrometer Control in a Brass Foundry," by A. S. Hall, Thwing Instrument Co., Philadelphia, and

"The Use of Pyrometers in the Casting of Non-Ferrous Metals," by R. D. Bean, Brown Instrument Co., Philadelphia.

Mr. Hall's paper relates the experience of a large electrical manufacturing company in the Philadelphia district.

Aluminum Problems Treated

One session was devoted entirely to aluminum at which these papers were scheduled.

"Aluminum Castings of High Strength," by R. S. Archer and Dr. Zay Jeffries, Aluminum Co. of America, attracted considerable attention. The authors discuss many of the general properties and casting characteristics of aluminum-zinc and of aluminum-copper alloys. The beneficial effect of iron on aluminum copper alloys is also reviewed as well as the well-known silicon or Alpac mixtures. Following this came several pages on the heat treatment of such alloy castings and it is stated that the physical properties vary with the manner of casting. Some interesting opinions are offered on the commercial development of heat-treated castings.

The authors conclude with an announcement of some recent laboratory results, made possible by the use of high purity aluminum made by an electrolytic refining process, it being suggested that the complete elimination of the iron constituents from the heat-treated aluminum-copper alloy castings would be highly desirable. One series of tests on sand-cast test bars of an alloy containing about 4.5 per cent copper and having a purity of about 99.93 per cent throw decidedly interesting light on the effect of time at the heat-treating temperature. A table of results is given illustrating the results of room-temperature aging which seems more marked in the high-purity alloys than in some others.

Mr. Archer, who presented this paper, answered a number of questions but the feature of the discussion was the participation of Dr. William M. Guertler, a famous metallurgist of Charlottenburg, Germany, and of E. V. Ronceray, vice-president Association de Technique de Fonderie de France, Paris, France. Both expressed their interest on the other side in the work of the authors, which, they testified, was well-known in Europe. Doctor Guertler referred briefly to the aluminum-zinc alloys as complicated, while Mr. Ronceray said that the silicon-aluminum alloys were of decided interest in France. Doctor Guertler was a prominent figure at the convention the week before in Chicago of the American Society for Steel Treating, where he delivered the first E. D. Campbell memorial lecture.

Other papers at the aluminum session were "Aluminum Alloy Permanent Mold Castings," by Dr. R. J. Anderson, Cleveland; the paper from the Czecho-Slovakian Foundry Association by Dr. V. Jares, technical school, Prague, on the "Constitution of Aluminum-Zinc-Tin and Aluminum-Zinc-Cadmium Alloys," and "Equilibrium Relations in Aluminum-Copper Alloys of High Purity," by E. H. Dix, Jr., and H. H. Richardson, Aluminum Co. of America, New Kensington, Pa.

Round Table Discussion on Brass

The second round table luncheon discussion on non-ferrous topics was held on one of the days but was not as successful as the first one held at the Syracuse convention last year. The luncheon facilities at the fair grounds were not as favorable as at a hotel. The late George K. Elliott, chief metallurgist Lunkenheimer Co., Cincinnati, had made extensive arrangements in organizing the discussion. At the last minute N. K. B. Patch, secretary Lumen Bearing Co., Buffalo, and F. L. Wolf, Ohio Brass Co., Mansfield, Ohio, took charge of the luncheon. A very profitable running discussion of brass foundry topics was successfully carried out, the attendance being nearly 75.

General Affairs Discussed at Dinner

The usual dinner of the Institute of Metals division of the A. F. M. and M. E. was held at the Book-Cadillac Hotel on Tuesday evening. Dr. Paul D. Merica, director of research, International Nickel Co., New York, presided. About 100 members and guests were present.

The chief speaker was Dr. William M. Guertler of Charlottenburg, Germany, who delivered a most interesting address on non-ferrous alloys in general, their development, their importance and their future.

W. M. Corse, Washington, secretary of the institute, delivered some reports and brought up the subject of cooperation with the American Society for Steel Treating in the preparation of data sheets. After considerable discussion it was decided to work with that society in the preparation of these.

Some attention was paid to the problem of future conventions, always held in conjunction with the A. F. A., because of the decision of the latter to meet hereafter in the spring. This would follow closely the February meeting of the A. I. M. and M. E. in New York. No decision was reached.

Association's Progress Revealed at Annual Meeting

AT the annual meeting Thursday afternoon, secretary C. E. Hoyt reported a net gain in membership of 400 since Jan. 1. On that date there were 1754 members, and since then 450 new members have been added. The present membership, after deducting withdrawals during the same period, is 2154. The objective of the association, he said, is 3500 members by Jan. 1.

President A. B. Root, Jr., in his annual address referred to the efforts of the association to encourage the membership of the younger men in the industry in order that there may be an increasing source from which to enlist new workers as the older members retire from active service. He noted a tendency among members to give less time to association activities as their experience and responsibilities broadened in their individual business stations, and he urged these to continue their association activities. He stated that

the increase in membership had been greater since the revision of the by-laws reducing the cost of individual membership than during any previous period, but that only time will disclose the wisdom of this move.

The president outlined briefly the work of the various committees during the year. He announced that a sub-committee of the committee on gray iron castings had been formed to develop a program of research as applied directly to the cast iron field and that the work of this committee, as it is now being planned, will probably be one of the most important and extensive pieces of work ever undertaken by the association. He announced that the color chart issued during the year by the committee on pattern equipment standardization had been well received and many plants and organizations are adopting the approved color scheme as their standard.

The election of officers and awards in the Obermayer contest and casting contests, referred to elsewhere, were announced.

A resolution was offered by the committee on resolutions and unanimously adopted, approving the plan of holding an international congress about every three years. A. B. Root, Jr., the retiring president, was elected an honorary member. Announcement was made of the appointment of B. D. Fuller, Cleveland, as chairman of the committee on research succeeding W. M. Saunders, Providence, R. I.

Various recommendations for standardization were made by the pattern standardization committee in a report submitted by its chairman, D. M. Avey. These included the marking of gage sizes on patterns by means of a disc on each side, the marking of patterns with the word "chilled" to indicate when chilled parts are necessary and the adoption of standard pattern letters.

American foundrymen were invited to participate in an International Foundry Convention and Exposition to be held in Dusseldorf, Germany, in 1929. This invitation was submitted in behalf of the German Foundry Association by Dr. Geilenkirchen, managing director of Verein Deutscher Eisengiessereien, Dusseldorf, who thanked the association for the cordial reception accorded to foreign visitors. He also spoke of the wonderful production records set by some of the American foundries.

The S. Obermayer Prize

The S. Obermayer prize, which is given annually for the most novel and useful device for use in the foundry, was awarded to Redfield H. Allen, Worthington Pump & Machinery Co., East Cambridge, Mass., who submitted a device for closing the doors of a

cupola. The committee having charge of the award announced that there were four contestants all of whom offered devices having merit. The committee commended the three other contestants for the devices they offered. These were H. V. Fitzgerald, Metric Metal Works of the American Metal Works, Erie, Pa., for a safety insulated pouring ladle; Carl Asbye, Chicago Malleable Casting Co., West Pullman, Ill., for a tilting spout and A. E. Shipley, East Cambridge, Mass., for a self-forming sprue.

The prize winning cupola door closing device which was shown in model form consists of a chain block or other hoist and two extension bars which slide into lugs on the cupola bottom doors and a two-part chain having rings on its ends to slip over the ends of the extension bars and a ring in the center for the hoist hook. The doors are closed by operating the hoist. A guard is provided so that the doors will not drop if the hoist fails.

Other Reports to Come

In a later issue of THE IRON AGE, reports of the session on sand control and on one or two other subjects will be published.

New Directory of Lake Superior Iron Mines

A valuable directory of iron mines and mine operators in the Lake Superior district, together with statistics of production in the last ten years, has been issued by the Lake Superior Iron Ore Association, Cleveland, W. L. Tinker, secretary. Annual shipments from each mine by ranges since 1915 are given, together with shipments from the upper Lake ports by either lake or rail, and receipts at Lake Erie and other ports. Iron ore imports are also given for 20 years, with countries of origin. More than half of the 2,190,697 tons of iron ore brought into the United States in 1925 came from Chile, which furnished no ore before 1921. There is also a table showing, by States, shipments of iron ore for the past 15 years from mines outside the Lake Superior district.

The Bethlehem Steel Co. has bought two 1000-kw. motor generator sets for its Franklin ore yards substation and another 500-hp. motor for its 10-in. mill of the new Gautier group, Cambria works, Johnstown, Pa., from the Allis-Chalmers Mfg. Co.

COMING MEETINGS

October

American Institute of Mining and Metallurgical Engineers. Oct. 5 to 9. One hundred thirty-fourth general meeting, Hotel Schenley, Pittsburgh. H. Foster Bain, 29 West Thirty-ninth Street, New York, secretary.

National Association of Manufacturers. Oct. 5, 6 and 7. Thirty-second annual meeting, Waldorf-Astoria Hotel, New York. George S. Boudinot, 50 Church Street, New York, secretary.

American Electrochemical Society. Oct. 7, 8 and 9. Fall meeting, Hotel Washington, Washington. Colin G. Fink, Columbia University, New York, secretary.

American Management Association. Oct. 11 and 12. Fall meeting, Hotel Statler, Cleveland. W. J. Donald, 20 Vesey Street, New York, managing director.

American Gear Manufacturers' Association. Oct. 14, 15 and 16. Semi-annual meeting, Briar-

cliff Lodge, Briarcliff Manor, N. Y. T. W. Owen, 2443 Prospect Avenue, Cleveland, secretary.

American Refractories Institute. Oct. 21. Fall meeting, William Penn Hotel, Pittsburgh. Miss Dorothy A. Texter, 2202 Oliver Building, Pittsburgh, secretary.

American Iron and Steel Institute. Oct. 22. Fall meeting, Hotel Commodore, New York. E. A. S. Clarke, 40 Rector Street, New York, secretary.

National Safety Council. Oct. 25 to 30. Fifteenth annual safety congress, Hotel Statler, Detroit. W. H. Cameron, 168 North Michigan Avenue, Chicago, managing director.

American Institute of Steel Construction. Oct. 27 to 30. Annual convention, Greenbrier Hotel, White Sulphur Springs, W. Va. Charles F. Abbott, 285 Madison Avenue, New York, executive director.

Autocracy Holds Italy's Industry

Clouds That Fiat Cannot Clear Away—Long Promised
Prosperity Still Delayed—Stabilization of Lira
Inevitable, But with It Come Bankruptcies

BY JOHN CALDER

L'Etat: C'est moi.

Passing from busy France, worried by her unfessed capital losses, her extravagant and often punitive scale of reconstruction, her parliamentary futilities and her economic instability, one enters a land where all doubts are among things forbidden.

On the Italian frontier in early August we received several practical demonstrations of that historic declaration, "The state—it is I." The royal decree of Jan. 3, 1926, did not create, it simply confirmed a state of things already existing. Italy's absolute master is therein set forth as "His Excellency, the Chevalier President Benito Mussolini, head of the Government; prime minister; secretary of state for foreign affairs, for war, for the navy, and for aviation; commander-in-chief of the army; commander-in-chief of the militia."

He is leader of the only existing political party except the relatively small communist group which is diligently supervised and contemptuously tolerated. In Mussolini's own recent words: "Today among the many former things for which there is no room must be included the Opposition." And by appropriate steps it has disappeared and with it the freedom of the press as well.

In fact and in law Mussolini holds all the powers that Napoleon Bonaparte held as First Consul and lost by excess of imagination. Today Italy's fate hangs on one man, with no provision except force for continuity or rectification of policy.

Autocracy and Couéism

It was no normal Italy that called for a savior five years ago. Compared with the crude defeatist and revolutionary programs that came in 1920 out of war sacrifices and suffering, there have been obvious material advantages arising out of Mussolini's revolution. It is still popular with the middle and professional classes and receives lip service at least from those who doubt whereunto this thing will grow.

Even the mildest anticipations, by competent persons, of economic trends are anathema. A prominent and highly esteemed captain of industry in Milan was publicly rebuked by the Duce recently for a sane pronouncement on the industrial outlook on the ground that "it adversely affected national morale." To the onlooker from another continent the Duce's policy seems a queer combination of autocracy and Couéism. Yet much credit is due to him alone. Order has everywhere

been restored in what was a land of terror. Mussolini's choice of some of his aides has been shrewd and satisfactory, and a pleasing contrast to some of his earlier official ruffians who, like Falstaff, have served their turn and are now unsuitable for the drawing room of an uncrowned king.

No Signs of Prosperity

The Duce's technical aides, and really responsible ministers, in railroad management and finance are decided successes compared with incompetent, greedy predecessors. But the people still await anxiously the promised but long delayed national prosperity for a nation 42 millions in number today and increasing yearly by 700,000 souls; a people already crowding the country's economic resources, ready to seize external opportunity for betterment but with no place to go now that immigration laws tighten against them in every land. It is the conviction that the League of Nations stands for the status quo in foreign possessions that made Italy cold toward it and cordial to Locarno. The thoughtful observer on the spot cannot avoid the conclusion that Italy needs and deserves a larger place in the sun than nature and earlier colonizers at present permit.

Yet there are many clouds on the horizon which cannot be cleared away by fiat. One finds in August the large surplus of imports over exports continuing and even increasing, and the falling off of tourist revenue in favor of France and the advantages of its low franc, though natural, are another trial.

In addition remittances from emigrants who no longer hope for final settlement in the homeland, and from the small quota still leaving, are greatly reduced. These and other invisible contributions are so low as to give much concern.

State Policy Toward Democracy

While the scotching of the snakes of Bolshevism in the past five years has met with approval, innocent bystanders have suffered greatly. Many employers and workers, who must necessarily remain silent, are viewing with alarm the disappearance of the last remnants of the right to make their own mistakes. The Duce has cast the die and the tightening of absolutist control is proceeding apace. Bills to abolish proportional representation in Parliament, to render the Chamber innocuous and to reform the Senate by making its members the nominees of the Fascist syndicates, or unions of workers and employers, respectively, are

THE fourth of Mr. Calder's articles on European industrial conditions throws new light on the situation in Italy, much as has been written in the attempt to define Fascism and Mussolinism. Prophecy is difficult in a situation so unprecedented as that in Italy today, with its mixture of the salutary and a policy that rides roughshod over human rights—"a queer combination," Mr. Calder calls it, "of autocracy and Couéism." Mussolinism as applied to industry leaves much to be desired, and the drift of things, as the American Management Mission found it, is rather to a worse than a better economic status.

ready for presentation to a subdued legislature. The whole program is a sorry compliment to the intelligence of the Italian people. It has been decided that above all things they must not think.

The new Podestà law is an amazing affair. It cancels at one swoop the civic councils in 7337 municipalities of 5000 inhabitants, or less, out of a total of 9148, or over 80 per cent of them. All municipal representation is withdrawn and the Podestà, a kind of medieval prefect, responsible to the central Government alone, takes its place. Even large municipalities, like Milan with its 840,000 people, may lose their councils if they are not "good" within the definition of the Duce.

It sounds like "Alice-in-Wonderland" when you close your eyes; but lo! when you open them again it is Italy! Yet the Duce is wise in his generation. Liberal increase of officers' pay in the regular army and precedence once more over the "Black Shirt" officers, and repudiation of his rougher agents at strategic moments have won the army already, and even the Vatican has ceased to indignant.

Some Progress Industrially

The foregoing idea of what is transpiring is necessary as a background for industrial observations, for the tourist who visits only middle Italy and its classic spots may easily depart unaware of the fact that there are invisible volcanoes in that sunny land whose present governmental organization and the philosophy supplied to support it would make Garibaldi turn in his grave. A word may be said on the rapid utilization of Italy's "white coal" which her industrials are pushing forward. As in France, the first selective uses of her waterfalls have been followed by engineering surveys and comprehensive power developments capable of wide distribution.

Southern Italy is largely agricultural and a poor land at the best. It is the northern highlands and the alluvial valley of the Po which in less than a generation have been transformed from an agricultural and pleasure land to a solid industrial addition to the country's resources. It was there that we were privileged to visit and inspect works and consult with leaders last summer.

Plants That Saw the "Revolution"

The first Italian plant visited was the large Perelli Rubber Works in Milan and there was a noticeable restraint of expression compared with English, German and French directors of industry, where men are not muzzled. This plant was one of the two first seized by the workers' Soviet committee in the futile industrial revolution of 1920. The other was a foundry which had locked out uncooperating employees, and both directors while conferring with the prefect found that their plants had been occupied and fortified. Only a few under-executives were admitted within the gates. Within a few days over 2000 plants in Italy were so seized and attempts made to operate them in the interest of the workers.

The result was a miserable fiasco and surrender in due course. As soon as raw stock failed, sales ceased and the purchase of supplies was found impossible, as well as the payment of wages, the employers were urged to return and make the plants yield a surplus and a payroll for a very docile set of disillusioned men. Breda Locomotive Works were also visited in Milan and were showing extraordinary versatility in making almost everything *but* locomotives, due to low domestic and export demand for these.

We found the managements of the large concerns of northern Italy distinguished and competent and representative of the best we have in the United States. This area contains some very large establishments, the Fiat in Turin and the great Ansaldo vertical trust which, like a number of similar Italian ventures, con-

trols all operations in a score of large works, from winning raw materials and manipulating imported ones to delivering finished machines, ships and various mechanical and other manufactured products. Such establishments, finely housed and adapted in architecture and arrangements to the climate are closely in touch with American practice, but like all European enterprises, are conditioned by the individualistic character of their customers and the great variety of relatively small orders.

Daring Legislation for Industry

Transcending everything else of internal industrial importance is the Syndicates law which came into force on April 3, 1926, four months before our visit. It is one of the most daring innovations in labor legislation yet attempted. A brief outline of its practical import in the industrial life of Italy may be of interest to American employers. Under it strikes, lockouts, cessation of work by three or more persons by previous agreement, "going slow," or interference in any way with the regular course of work by either employee or employer is punishable by fines and imprisonment. All disputes must be referred to the labor courts of appeal for each district, which have on them labor and employer experts, as assessors only, and the decision of the court is final.

All of the existing associations of employers, of workers, of experts, of professional men, etc., have ceased to be recognized legally, except as under reservations they qualify under the new law. For instance, an association, syndicate or union of employers or employed, whether engaged in manual or brain work may only be recognized if, in the case of employers, its members employ at least one-tenth of the workers residing in the district in which the association operates and belonging to the category for which the association was formed; or if, in the case of workmen, those on the union's roll represent at least one-tenth of the workers of that category residing in the district. The first one-tenth or more on the side of capital or labor which applies for recognition, and obtains it, is the sole legal body for that district. Its decisions and agreements are binding upon the other nine-tenths or less who may belong or not as they choose, but they must pay the regular levies, even if after application, they have been deliberately kept outside.

Political Tests of Worth

To obtain legal recognition, unions of employers or workmen or professionals must not only look after the economic and moral interests of their members; they must also assist and instruct them and promote "their moral and national education," and the leaders must guarantee "*the firm national faith*" and "*good political conduct from the national point of view.*" Workers and employers can thus be excluded at the will of the Government from the dominant union of their particular body for purely private and political reasons. The Duce and his administrators become all in all; for the first qualifying tenths may be sifted and delayed in admission until they are precisely of the composition, either of employers or of workers, best suited to the designs of the Duce.

All union or syndicate presidents or secretaries of worker or employer bodies must be names approved by the central Government, and the managing board of any of them may be suspended for not more than one year at the will of the prefect of the district, during which time all labor or employer affairs are transacted by the permanent officials originally approved by him and the Government.

The State Has First and Last Word

Employers naturally did not yield gracefully to what is practically compulsory arbitration on every

issue; neither did the craft unions—even the most conservative—relish the denial of their right to make their own mistakes about anything relating to their economic interests and to appoint arbitrators by agreement. The result, however, is that the Employers' General Confederation of Italian Industry has become the Fascist Confederation of Industry with one seat in the Grand Council, the highest body in the Duce's hierarchy. The corresponding labor body, the Confederation of Labor, while it still exists, can make no decisions, hold no conferences, express no opinions, nor make criticisms. Thus the last shadow of democracy passes out of the picture of Italian labor and employing interests, and there may be fireworks when the omniscience of the Duce fails him at a critical industrial juncture.

Bad Conditions Drifting to Worse

In spite of being taken with his employer completely under the wing of the state, the Italian worker, though compelled to be mute is far from content, and he has good reason for his dissatisfaction.

On Sept. 1, 1926, the "Napoleonic Year" of Fascism entered its ninth month. It did not bring Italy colonies or imperial glories but only trouble, privations and anxieties for the morrow. These are increasing in seriousness and with no opposition to blame and absolute internal control in his hands, the Duce's alibis are thinning out. The lira drops in spite of his indignant protest against some person or persons unknown. "Stabilization" is as inevitable in Italy as in France or Belgium, and in Italy it is feared by the autocracy now in power because it will mean the liquidation of many fine industrial undertakings, bankruptcies, unemployment and increase of the present very real but inarticulate unrest.

The grave danger for Italy is that the Duce—who deserves great credit for past services—has let his imagination stray beyond realities so far that he treats them often as non-existent. It is generally believed that the head of the Government is capable of doing *anything* to save the Fascist party, and that is an ever present anxiety to industrialists whose struggle to produce a surplus from domestic and export trade never was more efficient.

It was clear in August that the reckoning time was approaching and wise industrials feared the event. No conjuring of Volpi's, a most able finance minister, could cure the sick lira. In spite of the ebullient nationalism which naturally captures unreflecting youth, there is a falling off of its manifestations in the north. Employers and employees alike have seen millions of lira spent on triumphal tours and on senseless embellishment of cities of a country which is relatively poor, and they have still in their ears the slogan, "Enlarge your horizon." But the spendthrift has made a quick change and is now preaching "economy." "Tighten your belts" is not a pleasing command to workers whose nine-hour day is to be resumed by fiat and the

ninth hour not paid for. Employers and workers alike are realizing that they are the slaves now of a state syndicalism, the very opposite of that advocated by Mussolini himself when editor, not so long ago, of the syndicalist *Avanti*.

Wages too are to be reduced, though at present not quite equal to those paid in 1921 and 1922 when the cost of living was almost 30 per cent lower. The Government expects to fix political, not real, prices in some Roman shops manned by docile civil servants—only a small subservient minority of labor—but it will be hard to quiet labor by such amateur economics.

Summary

The troubles of all the countries visited this summer have nothing to do with wars or rumors of war. Europe is sick of these. They are domestic, economic and industrial, viz.: how to gain a reasonable living out of work, hard work of hand or brain. The self-sufficient lands like France, and in a large measure Germany, have the advantage over others if they have stable currency. The countries largely dependent upon external commerce and resources like England, Belgium and Italy must pool their best minds among capital, labor and statesmanship in each land and solve many simultaneous equations.

Italy has enforced internal peace but not adequate guidance—for no one man, however able, is sufficient for these things. The fall of the lira was plainly reducing costs for Italian exporting industries in August and helping to reopen some foreign markets that had been closed to them, but the workers as a class are undoubtedly worse off.

The Italian climate permits the individual to forego many articles of consumption necessary in France, Germany and Britain. The Italian worker eats less, clothes himself less heavily and makes his home for the greater part of the day in the open air. Nevertheless he has to live today on wages which leave no margin whatever for luxuries and the slightest elevations of cost of living are felt immediately and painfully at the family table. On Dec. 1, 1925, as compared with an index of 100 in 1914, the cost of living was 649 and the wages index figure was only 580. This is the second largest adverse differential against the worker in the last twelve years and now the decontrol of rents is just beginning to add its burden. Politics are one thing and hunger another. The fall of the franc and the spectacle of an impotent Parliament the Duce has been swift to use as distractions and temporary alibis.

We left Italy feeling that Mussolini, whether by temperament or by necessity, is tending rather to flatter the patriotic vanities of his people than to seek internally and externally more deep lying permanent advantages. The reactions of the inhabitants of the northern workshops during the next twelve months to their state control and the economic cycle will bear interesting lessons for our favored land. We left them with high respect for their fortitude and diligence.

Merger of Sheffield Companies Has American Branch

A company to be known as Darwins, Ltd., has been formed with a nominal capital of £1,000,000, in order to amalgamate and take over the following allied businesses: Darwin & Milner, Ltd., Sheffield, England; Sybry, Searls & Co., Ltd., Sheffield; Spartan Steel Co., Ltd., Sheffield; Nelson Tool Co., Ltd., Sheffield; Cobalt Magnet Steel Co., Ltd., Sheffield; Akrat Steel & Wire Mills Co., Ltd., Sheffield; Beeley Wood Steel Co., Ltd., Sheffield; Sheffield Annealing Works, Ltd., Sheffield; Hos-Syb Works, Ltd., Sheffield and Warsaw, Poland; Birks, Stevens & Son, Ltd., Sheffield; Darwin & Milner, Inc., 1260 West Fourth Street, Cleveland; Darwin &

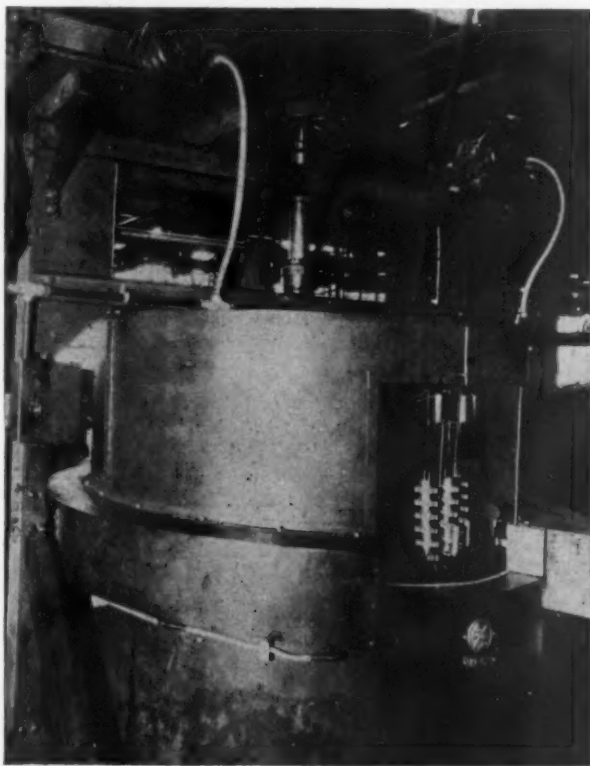
Milner, Ltd., Brussels; Neunteichwerk, Lennep, Rheinland, Germany, the administration of which is centered in the recently acquired Fitzwilliam Works, Templeborough, Sheffield. The various sections of the business are continuing under the same management and trademarks, and manufacturing will also still be carried on not only at Fitzwilliam Works, covering six acres, but also at the Cannon Steel Works, Carlisle Street, Sheffield; Beeley Wood Forge, Sheffield, and Akrat Steel & Wire Mills, Sheffield.

The second annual exhibit of the manufacturers of Rochester, N. Y., will open in the Democrat and Chronicle Building, Rochester, on Oct. 4, and will continue for one week.

Rotary Tempering Furnace for Gears

Automatic Control to Hold Temperature Within Close Limits—Definite Cycle Used
—Oil Relied Upon for Constant Conditions

A CONTINUOUS electric, rotary type, oil tempering furnace with automatic control was installed recently in the plant of the Warner Gear Co., Muncie, Ind., manufacturer of transmissions and differentials for automotive vehicles. This furnace, used for heat treating gears, is said to be the first continuous oil drawing furnace ever built. To insure a product as uniform as possible, it was desired to eliminate the human element in determining the time and temperature in drawing steel. The furnace was designed and built by the Strong, Carlisle & Hammond Co., Cleveland, from specifications prepared by E. F. Davis, metallurgist of the Warner Gear Co.



The Furnace Is Cylindrical. Having an Oil Bath at the Bottom. Gears to be drawn, some of which are shown above, are suspended on wire hangers from the rim of a rotating wheel

After considerable experience with various types of furnaces in which the work is tempered by means of heated air, the Warner company decided that neither the radiation nor the convection principle of air drawing assured a product having uniform penetration of heat within the narrow limits required for fine gear quality. If, on the other hand, the metal is drawn by immersion in some heating medium, such as oil or molten salts, there is no question that the steel will reach the temperature of the liquid in which it is submerged; if, then, the temperature of the heating fluid can be maintained within accurate limits, the product will be correspondingly uniform.

However, the Warner company found objection to the ordinary stationary oil bath, in that it is subject to temperature variance due to the crudity of the heat application, and also because the results obtained from a furnace of this type are dependent upon the personal supervision of the operator—the human element. Frequently, when gears developed brittleness, the company found this due to one of these causes.

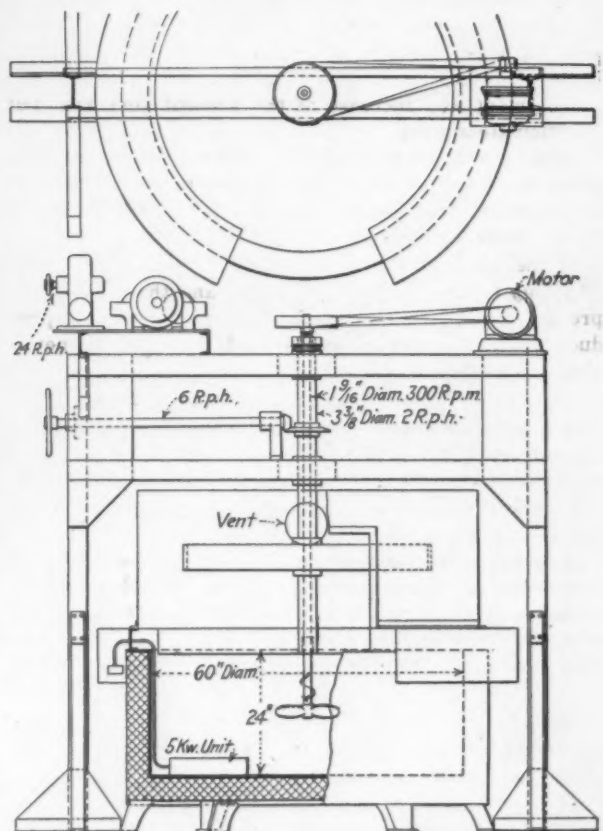
Among the various advantages claimed for the new

type of furnace are its continuous operation, rapid heating, uniformity of temperature and product and the features of construction and arrangement, which, although it is an oil drawing furnace, permit its installation in the production line in a machine shop, without inconveniencing the machine operators by heat and fumes. These are carried away through a vent in the back of the furnace.

Construction and Principles Involved

The furnace is cylindrical, 9 ft. 3 in. high and 9 ft. 5 in. in diameter. The oil used in the drawing operation is contained in a receptacle at the bottom. This is 60 in. in diameter and 24 in. high, and contains 200 gal. of oil. The oil chamber is insulated with Sil-o-Cel insulating material located between the chamber and the furnace shell.

An overhead frame supports two vertical shafts, one within the other. The inner shaft actuates a propeller which agitates the oil, so that an even temperature is maintained in it. This shaft and propeller are driven



The Operation of the Furnace Is Through Two Vertical Shafts, One Inside the Other. The inner shaft, driven by belt from a motor, actuates a propeller which agitates the oil contained in the bath. The outer shaft, driven by a set of bevel gears from a jack shaft operated by chain and sprocket from a speed reduction set, rotates a cast iron wheel from which the gears to be drawn are suspended

by a belt and pulley. The outer shaft supports and revolves a horizontal cast iron wheel 48 in. in diameter, from the rim of which the work is suspended on wire hangers. The shaft connected to the wheel has a variable-speed drive from a motor through a Reeves speed-reduction set—a worm gear, chain and sprocket, jack shaft and a set of bevel gears. The speed of the motor is 1200 r.p.m. and with the various reductions the re-

quired slow speed is provided for the wheel on which the work is handled. With the variable-speed drive the wheel makes a complete revolution in from 15 to 60 min. Each shaft is driven by a $\frac{1}{4}$ -hp., 3-phase, 60-cycle motor, both motors being mounted on the top frame.

The furnace temperature is produced by ten heating units supplied by the General Electric Co. These are submerged in the oil, being located on the bottom of the oil chamber. They can be quickly removed for cleaning. The temperature is automatically controlled by a Leeds & Northrup instrument located on a control panel at the side of the furnace and connected to one thermocouple in the oil bath. The current is automatically thrown off as the temperature varies within the limit of 5 deg. plus or minus. Tests made in all sections of the oil chamber show less than 10 deg. maximum variation.

Operation of the Furnace

A high-carbon chromium alloy steel is used for the gears to be treated. They are first heated in a standard Leeds & Northrup hump furnace. After they are quenched, the furnace attendant hangs them on a wire carrier having a hook on the end for hanging over the rim of the wheel. Several gears are placed on each carrier. After a carrier is loaded it is suspended from the revolving wheel and the gears are completely immersed in the oil. An opening 18 in. wide and 24 in. high is provided in the side of the furnace for charging and unloading.

After the wheel has made a complete revolution the gears are lifted out of the oil and hung on the wheel on a secondary hook in the same carrier. In this position they are suspended slightly above the oil and are left in the furnace 6 min. longer, so that the oil will drain off. After draining, they are removed from the furnace, washed and wire-brushed by another operator.

In operation a 45-min. cycle is being used. It takes 9 min. to heat the largest gears completely through the center to the drawing temperature of 450 deg. Fahr., and they are kept at that heat for 30 min. The remaining 6 min. is the time taken for draining before removal.

To heat the furnace to 450 deg. Fahr. requires 3 hr. and the consumption of 132 kwhr. The current consumption is 75 kwhr. per ton of steel. The company's average cost is 2c. per kwhr., making a cost of \$1.50 per ton for tempering gears. The furnace has a capacity of 900 lb. per hour. It is stated that its electric capacity is more than ample to take care of this amount of production and maintain the temperature desired.

As the design of this furnace permits its location in a production line, it follows the present-day tendency in plants in the automotive industry engaged in mass production. This the use of electric furnaces makes practical. By placing a heat-treating furnace in its proper position in a production line, considerable time and labor are saved which otherwise would be required in conveying work back and forth to a separate heat-treating department.

To Develop Standards to Improve Quality of Zinc Coatings

The organization of a committee to carry on the important work of standardizing the quality of zinc coatings for iron and steel products has been completed by the American Society for Testing Materials under the auspices of the American Engineering Standards Committee. The following six technical sub-committees are ready to begin their work:

- I. Hardware and Fastenings, R. F. Hosford, chairman, American Telephone & Telegraph Co.
- II. Sheets and Sheet Products, J. T. Hay, chairman, United Alloy Steel Corporation.
- III. Plates, Bars, Structural Shapes and Their Products, V. F. Hammel, chairman, Electric Bond & Share Co.
- IV. Pipes, Conduits and Their Fittings, F. N. Speller, chairman, National Tube Co.
- V. Wire and Wire Products, J. C. Johnson, chairman, Pennsylvania Railroad System.
- VI. Methods of Testing, C. D. Hocker, chairman, Bell Telephone Laboratories.

Several of these sub-committees have been further subdivided in order to facilitate the work involved in developing the specifications in which the ultimate results of the committees' work will be presented. Another committee on marine hardware and ship fittings has not yet been organized, and will be taken up for consideration later as the work develops.

The officers of the committee on specifications for zinc coating are: Chairman, J. A. Capp, General Electric Co.; vice-chairman, C. E. Trewin, New Jersey Zinc Co.; secretary, S. S. Tuthill, American Zinc Institute. The membership includes accredited delegates from 37 organizations, including technical and trade associations representing the electric and steam railroads, architects, steel manufacturers, the oil industry, automotive engineering, agricultural engineering, metallurgical engineering, experts in testing of materials, the water works industry, marine interests, valves and fittings manufacturers, the zinc producers, purchasing agents, manufacturers of electrical supplies, the gas, electric light, power, telephone and refrigeration industries, the electroplating industry, four bureaus of the Federal Government, and others.

An important contribution to the development of suitable specifications is an extended research on uncoated sheets and on zinc-coated sheets, wire, hardware and other objects, exposed to various atmospheric conditions, including salt air, smoky air of towns, clear country air, moist, humid air of southern countries,

etc. This work is being carried out under the auspices of committee A5 on corrosion of iron and steel of the American Society for Testing Materials, and the results will be available for the use of the sectional committee.

Program of Meeting of American Iron and Steel Institute

The thirtieth general meeting of the American Iron and Steel Institute will be held in the Hotel Commodore, New York, on Friday, Oct. 22. There will be three sessions: a forenoon session, beginning at 10 a. m.; an afternoon session at 2 p. m.; and a banquet in the evening at 7 p. m. During the noon recess a luncheon will be served as usual. The program of papers is as follows, to be delivered following the opening address of the president, Elbert H. Gary, chairman United States Steel Corporation, New York:

- "Corrosion of Structural Steel," by F. N. Speller, metallurgical engineer National Tube Co., Pittsburgh.
- "Welding of Iron and Steel," by Prof. C. A. Adams, director American Bureau of Welding, New York.
- "Plate Mills—Recent Developments and Tendencies," by F. M. Gillies, superintendent plate mills, Inland Steel Co., Indiana Harbor, Ind.
- "Action of Sulphur in Basic Open-Hearth Steel Practice," by A. N. Diehl, vice-president Carnegie Steel Co., Pittsburgh.
- "Use of Manganiferous Ores and High-Manganese Basic Iron in Open-Hearth Steel Practice," by A. W. Smith, superintendent blast furnaces, Youngstown Sheet & Tube Co., Youngstown, Ohio.
- "Production of Low Phosphorus Pig Iron in the Birmingham District," by E. K. Miller, superintendent foundry furnaces, Tennessee Coal, Iron & Railroad Co., Birmingham.

Ruling Rates Exceeding Sum of Intermediates

WASHINGTON, Oct. 5.—The Interstate Commerce Commission last week ruled that carriers may make reductions in rates which exceed the aggregate of intermediates, during the period while tariffs are under suspension.

A meeting of the administrative board of the American Engineering Council at Ithaca, N. Y., is planned for Nov. 11 and 12. Topics to be discussed include safety and production, registration of engineers, government reorganization, and jurisdictional strikes in the building industry.

ARCH BEAM MONORAIL RUNWAY

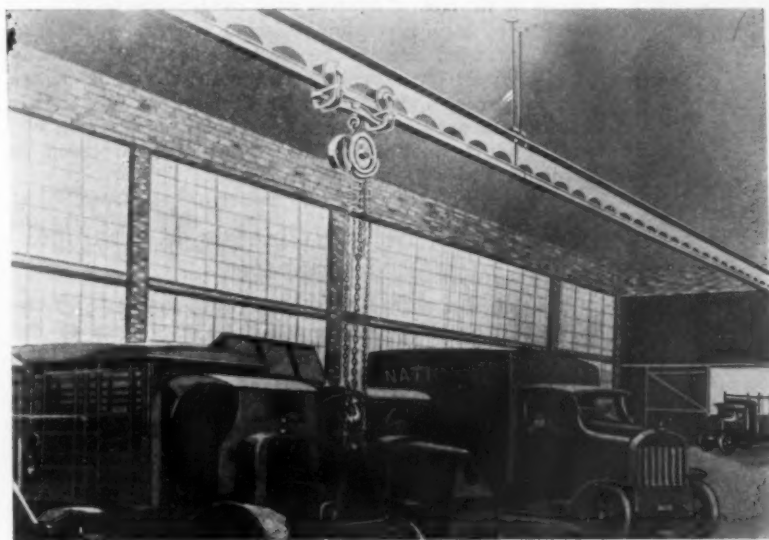
Supporting Beam and Rail Combined in One Unit—Standard Rolled Section Used

A monorail track, made up of a combination of standard rolled products to meet the requirements of an overhead conveying system, has been developed by the Electric Tramrail Division of the Cleveland Crane & Engineering Co., Wickliffe, Ohio. This runway is built of a half-section of a structural steel beam from the web of which semi-circular sections have been punched at close intervals to form a series of arches. This structural section forms the supporting member for a standard high-carbon steel tramrail rail which is welded to the beam, the two members thus being combined into one unit.

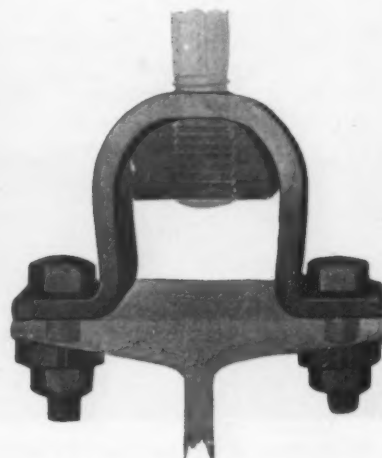
As it is often found impractical to suspend the reg-

surface of the web at each point of contact. The milling necessary is done on the soft steel of the I-beam. The only machine work required on the rail section is the drilling of two holes in each end. It is stated that without the arches it would have been necessary either to preheat the I-beam and rail or to provide some other means for taking care of the stress caused by expansion during welding.

The arch-beam runway is suspended from a forged-steel U-shaped cleat that is seated on a half-round nut supported from an adjustable hanger rod which permits the runway to swing with the load. It is pointed out that this sideward movement made possible by the arch construction supplemented by the method of suspending the runway allows equalizing of loads on the wheels, insures easy operation, increases the tractive effort of electrically-propelled carriers and at the same time reduces wear and tear. It is also stated that the



Arch Beam Runway Supported From Ceiling by Hanger Rods Is Shown at Left. The U-shaped cleat used in suspending the runway is shown below, as well as I-beam after it has been punched and before it has been joined to the tramway rail



ular tramrail rail from the existing superstructure of a building and as an expensive superstructure is frequently needed to meet certain conditions, the company's engineers turned their attention to developing a unit that would act as a beam and monorail track combined and that would be capable of carrying a load on long spans. Consideration had to be given to the fact that overhead conveying systems in constant service carrying heavy loads (especially if electric travel is employed) must be built to withstand the hard service and wear to which they are subjected.

The company considered the use of the runway of high-carbon steel rolled in one section. It was found, however, that mills were unwilling to produce the special section from high-carbon steel, as it would be difficult in one heat to make the necessary passes to reduce the steel to the shape required for the complete unit of supporting beam and rail section. In addition, had the mills been willing to furnish the unit in high-carbon steel, difficulties would be met with in drilling, milling and other machining of the high-carbon material.

It was finally decided to utilize the regular high-carbon steel tramrail rail for the conveyor track, but difficulties were encountered in attaching this rail to the heavier beam section. These difficulties were overcome by designing the arch beam.

The arch beam is made from a standard 12-in. Bethlehem I-beam which is divided through the web into two sections by being fed through an automatic punching press. As shown by one of the illustrations, the beam is cut so that the arches are interlocked and each piece is of greater depth than one-half of the original beam and waste of material is almost negligible. The arches are on 12-in. centers and the flat surface of the web left between the arches is $2\frac{1}{2}$ in. long. When the beam sections leave the punch press each half is shaped ready to be joined to the rail section.

The high-carbon steel T-rail is welded to the flat



arch is so near the neutral axis that the cutting out of material in the web does not materially effect the strength of the beam, although reducing weight and increasing flexibility. The high-carbon steel rail having high tensile strength is on the tension side and the wide I-beam flange at the top provides sufficient rigidity to prevent the buckling of the beam when used on long spans.

When it is possible to attach fittings to roof trusses or columns it is not necessary to install any superstructure for supporting the arch beam. The runway is fabricated in lengths to fit the spans between supports.

In addition to its use for electrically-operated monorail cranes, the arch-beam runway may be used also as a runway for 1 and 2-ton hand-operated cranes and transfer bridges. It is pointed out that there is combined in this type of construction light weight, rigidity and pleasing appearance.

New Westinghouse Box Type Electric Furnace

A new box or hearth type electric furnace, particularly applicable to production work in plants for the heat treating of machine parts and to tempering lathe and planer tools and dies and punches in the tool room, is now being manufactured by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

The furnace is constructed of a shell of heavy boiler plate, riveted and bolted to a structural steel frame, and heavy front castings. The heat insulation and the heating chamber are inclosed in the shell. The entire roof is assembled in a frame and bolted to the



For Production Work in Steel Treating This Electric Furnace Has Nickel-Chromium Heating Elements and Interior

lower portion of the shell. A feature of the construction is that the roof may be lifted and swung to one side for the inspection or repair of the linings and the heating elements.

The direct radiating heating elements, made of nickel chromium, are protected and open, and are assembled in a frame of the same metal. They may readily be removed if necessary. A cast nickel, chromium floor-plate serves to distribute the heat evenly, to protect the bottom elements, and to form a smooth surface for handling the material in and out of the chamber. By means of automatic regulation the furnaces are controlled within close temperature limits, up to a limit of 1850 deg. Fahr.

Three sizes are built, having capacities, at 1500 deg. Fahr., of 100 lb., 240 lb., and 360 lb. of steel per hour, taking connected loads of 15, 27, and 40 kw. respectively. The smallest size uses single phase, 110-volt current; the intermediate size, single phase, and the largest size is designed for 1, 2 or 3-phase, 220-volt only.

Cites Growing Use of Bronze in Railroad Electrification

That the growing use of bronze wire and fixtures in the electrification of railroads is fast becoming the chief point of contact between the non-ferrous metal industry in the United States and transportation was brought out by William R. Webster, vice-president of the Bridgeport Brass Co., Bridgeport, Conn., in a talk before the Metropolitan section of the American Electric Railroad Association on Oct. 1.

Mr. Webster spoke on the general subject of "The Copper and Brass Industry and its Relation to Transportation," and illustrated his points with a series of stereopticon slides. Following a brief résumé of the smelting of copper and the various forms in which it is prepared for commercial consumption, he explained the principles of the electric furnace as it is now extensively used in the making of brass. Recent developments in the use of bronze wire, which has been found to have the high corrosion-resisting properties, have led to its extended use in the electrification of railroads. The overhead structures in a number of recent electrification projects, made almost entirely of this newly developed bronze alloy, as Mr. Webster pointed out, will likely endure until electric railroads are displaced by airplanes.

Charles M. Schwab Heads Mechanical Engineers

The election of Charles M. Schwab, chairman of the Bethlehem Steel Corporation, to the presidency of the American Society of Mechanical Engineers for the year beginning in December has been announced through the regular canvass of the mail ballot of the membership by the tellers of election. The other officers elected are as follows:

Vice-presidents: Charles L. Newcomb, manager Deane Works of the Worthington Pump & Machinery Corporation, Holyoke, Mass.; Everett O. Fastwood, professor of mechanical engineering, University of Washington, Seattle, Wash.; Edwards R. Fish, vice-president Heine Boiler Co., St. Louis.

Members of council: Col. Paul Doty of St. Paul, chairman Minnesota State Board of Registration for Architects, Engineers and Land Surveyors; Ralph E. Flanders, general manager Jones & Lamson Machine Co., Springfield, Vt.; Conrad N. Lauer, treasurer and general manager Day & Zimmermann, Inc., consulting engineers, Philadelphia.

Treasurer, Erik Oborg, editor of *Machinery*, New York.

Increased Production of Galvanized Sheet Metal Ware

August production of galvanized sheet metal ware, as reported by twelve concerns comprising a large proportion of the industry, was 172,066 dozens, valued at \$615,375, as compared with 147,410 dozens, valued at \$528,566 in July. The galvanized ware included in this summary is the product resulting from dipping made-up shapes in molten zinc and not utensils of galvanized sheets.

The Baltimore Chamber of Commerce has filed a complaint with the Interstate Commerce Commission asking that export and import rates to and from Baltimore be given a differential of 6c. per 100-lb. under rates existing by way of New York. At present the Baltimore differential is 3c. under New York.

Schedule of the next installments of the Business Analysis and Forecast, by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows: Oct. 14—Activity in Steel Consuming Industries; Oct. 21—Position of Iron and Steel Producers; Oct. 28—General Business Outlook.

In This Issue

Commercial annealed steel castings with a carbon content above 0.20 per cent have a much lower shock toughness than heat-treated castings of a higher manganese content.—Increase in strength gained by adding vanadium is said to be at the expense of elongation, reduction of area and bend.—Page 984.

Believes that fused silica is better than sand for permanent molds.—Results justify the higher cost. The Holley process employs a coated mold, smoked with an acetylene flame before each pouring.—Page 986.

"At least two-thirds of the jobbing foundries do not know whether they will make a profit on the work they quote on."—Foundry association executive urges the general adoption of a simple, accurate cost system which will enable foundries to avoid losses caused by ignorance of costs.—Page 989.

Guesswork in oil-tempering gears is removed by automatic, continuous electric furnace.—Cleveland firm builds first furnace of its kind. Temperature is held within close limits, producing uniform results.—Page 1001.

Sulphur in gray iron is reduced by jolting.—Moving the ladle up and down 1½-in. about 100 times a minute causes half the sulphur to rise, so that it may be skimmed off.—Page 992.

Clouds are gathering in Italy.—Though Mussolini has done much, the majority of the workers are probably worse off than ever. The country is economically poor; population is increasing all too rapidly, and the trade balance is unfavorable.—Page 999.

Decrease in surface hardness of a gray iron casting is a direct indication of a decrease in strength.—So conclude investigators who have sought to determine the relation of strength to thickness. The per cent of decrease in transverse strength tends to follow the silicon content.—Page 980.

Will the addition of manganese to gray iron overcome the harmful effect of high sulphur?—The question has never been satisfactorily answered, says British foundryman. If the iron is high in sulphur, it must be melted at a very high temperature.—Page 981.

Shipments of American machinery abroad fell off in August.—The total value was about 32.5 million dollars, as against 34.1 millions for July.—Page 1045.

"Maximum strength of gray iron castings will be found at the lowest phosphorus content compatible with fluidity."—Phosphorus lowers strength and resilience, increases Brinell hardness and stiffens the iron slightly, says metallurgist.—Page 982.

Highest September pig iron output since 1918.—Average daily production was 104,543 tons, a gain of 1302 tons per day over August. On Oct. 1 there were 216 furnaces in blast, three more than on Sept. 1.—Page 1014.

Foreign countries took less American iron and steel in August.—Gross tonnage shipped out of country was 171,588, as compared with 194,717 tons in July. Our purchases of foreign iron and steel are increasing, the total for the first eight months of the year being 786,850 tons, an increase of 28 per cent over the same period in 1925.—Page 1043.

What is the best method of testing gray iron?—The French prefer the shearing test, believing that testing the iron in the ladle does not reveal what the strength of the casting will be. They test the weakest part, while Americans test for average quality.—Page 980.

Declares competition is steadily growing more constructive and more intelligent.—Manufacturers of steel castings, malleable castings, and forgings are tending more and more to consider the interests of the consumer, selling their products strictly on their merits.—Page 984.

Foresees new markets for gray iron castings.—Melting at high temperature and pouring at low temperature produces a much finer quality casting, suitable to uses now closed to ordinary foundry product.—Page 982.

Will the newly-formed European steel trust affect our steel industry?—Though formed primarily to protect the four member countries against each other, it is not likely that competition for American business will be any less active than it has been in the past year.—Page 1010.

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European Steel Cartel No Surprise

HOW the element of surprise tends to promote exaggeration is shown in the way the news dispatches from Europe have been taken regarding the raw steel cartel formed there. The actual forming of the syndicate became news for the general public. There naturally followed detailed cable reports to the newspapers of this country. The unusual case of close cooperation of large industrial aggregations overspreading national boundaries was calculated to excite interest. The portent at first blush of vigorous international competition was the immediate reaction. And all coming like a bolt out of a clear sky, there was a stir in circles not directly concerned with steel but keenly interested in things affecting business.

Readers of THE IRON AGE, far from being surprised, were actually looking for word of the establishment of the pool. For every issue in the last two months has had its items tracing the developments ever since the renewed negotiations became active. The news from Europe was confirmation, even to the figures of the quotas. Covering the case was all in the day's work of the dependable business paper.

For News Summary See Reverse Side

European Steel Syndicate Established

Amount of Production As Allocated Among Nations Now in Agreement—Higher Prices Already Named

THE international steel syndicate, cartel, pool or trust, as it is variously called, the negotiations over which have been followed closely in the European correspondence of THE IRON AGE over the last two months, has been consummated by a five-years' agreement signed at Brussels, Belgium, Sept. 30, by representatives of the steel industry of France and Belgium, following an agreement of Germany and Luxemburg made several weeks earlier at Paris.

Details of the cartel are not yet available, but a primary reason for its formation is admittedly to avoid overproduction by proportioning output according to consumption needs. There appears to be no warrant for assertions that it aims at a reduction of output as a means for stabilizing, let alone advancing, prices. A percentage of the total production of the signatory countries to the cartel is assigned to each and for maintaining the organization and a central fund, the present plan requires that each country pay, say, \$1 for every ton produced. Any country producing in excess of the allotted tonnage must pay into a pool a penalty, amounting to about \$4 per ton, per ton of excess.

It is expected that sales quotas will be fixed every quarter. Should a country show a deficit of production based on its quota, \$2 a ton, say, will be allowed from

recent weeks in these columns, considerable difficulty has arisen over the setting of the quotas. One of the tables gives the production quotas under the agreement and shown alongside these are percentage figures of production for both 1924 and 1925. It is to be noted that Germany produced nearly one-half of the steel made by the five groups at present in the syndicate, whereas the German quota is 43.18 per cent. The French and Belgian quotas are larger than their percentage of production in the last two years.

Indications are that the quotas are based on a production of about 26,000,000 metric tons per annum, or about 2,160,000 tons per month. Under this arrange-

Monthly Quotas of Member Countries of Raw Steel Cartel (Metric Tons)

	Annual Production Rate		
	26,000,000	27,500,000	30,000,000
Germany	925,000	990,000	1,075,000
France	670,000	715,000	780,000
Belgium	295,000	295,000	295,000
Luxemburg	180,000	190,000	205,000
Saar	130,000	130,000	145,000

ment monthly quotas are apparently those of the second table. On the basis of the Belgian quota's being 11.63 per cent, however, the Belgian monthly quota would be 255,000 tons. In the concessions bringing about the final agreement the Belgian quota was raised to 295,000 tons (which is equivalent to its pro rata share when the total annual output of the five groups amounts to 30,000,000 tons). There is apparent expectation that at the end of five years production of 30,000,000 tons would be an established fact, but it is said that Belgium will not be allotted a higher figure than 295,000 tons per month should meanwhile the total production exceed 27,500,000 tons. As shown in the table under this latter rate of output, Germany's quota would be about 990,000 tons per month and the others would be likewise raised, while the Belgian figure would remain constant. In passing, it may be noted that the output of the five groups in 1925 was 27,350,000 metric tons, but the rate so far this year is below 25,000,000 tons. Curtailment evidently did not wait on the formation of the syndicate, if that were to be taken as one of its objects.

Steel interests in Czechoslovakia and Austria have meanwhile entered into negotiations to enter the syndicate, and for these countries an allotment of 2,000,000 tons per annum is proposed. This will bring the amount of output under control to a basis of 29,500,000 metric tons.

Quotas of European Raw Steel Cartel Compared with Output

	Per-centage of 1925 Output	Per-centage of 1924 Output	Per-centage Output 2 Years	Association Quota Per Cent
Germany	50.7	48.2	49.4	43.18
France	27.1	27.2	27.2	31.19
Belgium	8.8	11.3	10.	11.63
Luxemburg ..	7.6	7.4	7.6	8.23
Saar	5.8	5.9	5.8	5.77

Production for the five groups was 26,919,000 gross tons (27,349,000 metric tons) in 1925; and 24,916,000 gross tons (25,314,000 metric tons) in 1924. The average of the two years was 25,917,000 gross tons (26,332,000 metric tons).

the syndicate fund to the extent of the deficit. Thus the cartel plans to estimate consumption and allocate production accordingly and more or less on the showing of the quarter ended. No information is forthcoming that suggests measures for price fixing, but instead the intimation is that the regulations will tend to prevent overproduction and to establish reasonable price levels in international markets.

As has been pointed out in the articles printed in

European Cartel Regarded as Helpful to American Interests

WASHINGTON, Oct. 5.—Organization of the German-Franco-Belgian-Luxemburg-Saar steel combine will have no great effect on the American steel industry, but its influence on domestic and export business of United States producers probably will be helpful rather than harmful, in the opinion of Luther Becker, chief of the Iron and Steel Division, Department of Commerce.

Mr. Becker pointed out that fundamentally organization of this combine, which has been in process for several years, is for the purpose of stabilizing prices, preventing over-production and to maintain employment at a good and steady level. It is his view that European prices will therefore establish a higher world's price level and at the same time advance domestic prices. The result, it is believed, will be to make home markets more attractive for producers in the combine and turn greater production to them than at present and simultaneously leave broader markets for the United States in international trade, particularly as to neutral markets. Moreover, it was explained, it would seem that this will relieve pressure

by European makers in the American market and thus cut competition from abroad.

"The organization of these European steel makers," said Mr. Becker, "manifestly means concentrated competition. Of course, this means a higher price level, in my estimation. Another vital element to be considered is that this likely will greatly aid in stabilizing currency in those countries where there has been a downward swing in exchange. The only important continental steel producing country which did not join the combine is England, and it remains to be seen whether or not she will become a member of the consortium. The prevailing view in the domestic iron and steel trade appears to be that England will join sooner or later. The understanding is that England had urged that she be given preferences in the markets of her own dominions.

Possible Check to Dumping

"The organization ought to have a distinctly important bearing in the steel markets of the world. Under the agreement each of the member countries is to be

assigned a quota and supported by stipulations in the agreement they are assured of specified tonnage quotas or they are to be compensated if they do not receive them. It is claimed that this means prices will be more uniform and there will be no incentive for engaging in such practices as dumping and the setting up of bounty systems, two questions which have been of considerable concern to American iron and steel makers, and, in fact, still are a source of more or less apprehension.

"There has been a great deal of discussion in the American iron and steel trade with regard to dumping of foreign iron and steel in the domestic market and closely allied to this question was the matter of bounty systems, which, it is charged, have made it possible to penetrate the American market with foreign products to a greater extent than, it is believed, would have been possible under normal competition. As is generally known, there has been particular concern shown by Eastern merchant blast furnace interests over the heavy importation of foreign pig iron coming from such countries as India and Germany. It is true, too, that imports of steel from Germany into the United States have been growing and that Germany led all other countries as the source of importations of pig iron and steel in the United States in August.

"With prices raised by the recently organized steel combine, it would seem that these importations will be cut down and that American exportations ought to increase. Of course, the countries in the combine will fight strongly for foreign markets and necessarily American manufacturers may expect to face vigorous competition. The foreign producers are much more dependent upon export business than our American producers and from the fact that the English industry must export about 65 per cent of its production, it would seem to indicate that England will ultimately join the combine. Another interesting probability, if it actually is not provided in the agreement, is the exchange of German coke and French ore."

Production Basis for First Year

The total production for the first year, according to the reports received by the Iron and Steel Division, has been set by the combine at 27,587,000 metric tons. The distribution among the countries affected is as follows: Germany, 43.5 per cent; France, 31.19 per cent; Belgium, 11.56 per cent; Luxemburg, 8.55 per cent, and Saar, 5.2 per cent. The delay in completing the negotiations was due principally to the fact that Belgium had been holding out for a higher quota and finally was successful in attaining its demand.

Judge Gary Looks for Continued Good Business

"Business conditions in the United States will continue to be good during the rest of 1926 and probably during the year 1927," a banker is quoted as saying to Judge E. H. Gary, chairman United States Steel Corporation. The statement was repeated in an interview with Judge Gary by newspaper representatives Tuesday afternoon. President Gary was emphatic that the banker is as competent as anyone in this or any other country to express an opinion on the subject.

"Our own business conditions at the present time are very satisfactory," he added, "certainly better than we had any reason to expect they would be at the beginning of the present year." He then offered to back up the statement with a few facts, quoting from the reports of managers of sales of the different subsidiaries of the Steel Corporation, and he mentioned also that the report to be made on Oct. 9 with respect to the amount of unfilled orders at the end of September "will show some increase, perhaps considerable." He stated that September bookings of new business averaged close to 46,300 tons per day, and parenthetically said they were "hoping and expecting the condition would be as good this month." Shipments in September averaged about 44,000 tons per day. For the few days of October for which figures are available new bookings amounted to 42,000 tons per day. The corporation, he said, is operating at the moment at 86 per cent of ingot capacity.

Judge Gary made only a brief reference to the European raw steel cartel. He admitted there would be some competition with foreign countries, but it will not be bitter or unreasonable. The most injurious competition, he added, is that "which originates within the United States." Also he took occasion to reiterate what he has said before, that the Steel Corporation regards friendly competition as desirable, and he remarked that the present day producer knows very little of the tricks in business compared with the old regime. The Steel Corporation, he continued, never reaches out aggressively for a competitor's business, and it does not cut under published prices to get business.

The reports from the sales managers of the subsidiary companies were uniformly favorable. That of the Carnegie Steel Co. mentioned that the warehouse business of one week in September was the largest of any in two years. Also, it reported quite an improvement in the amount of new business. The Illinois Steel Co. reported an improvement in the sales of rails in September and a healthy outlook for the rest of the year. The American Sheet & Tin Plate Co. reported September good in new business, specifications and

shipments and mentioned that most buyers were covered for two or three months. The American Bridge Co.'s report was that the market was moderately active, competition aggressive, and there was some increase in the volume of prospective business.

To Resume Bethlehem Merger Hearings in New York

WASHINGTON, Oct. 5.—Resumption of hearings in the Bethlehem merger case has been set for 10 o'clock on Oct. 19 at room 803, 45 Broadway, New York, it was announced today at the offices of the Federal Trade Commission. Present indications are that the hearings will continue for two weeks, after which it is expected direct testimony will be completed by the commission in Washington.

To Reduce Number of Punch and Die Sizes

WASHINGTON, Oct. 5.—Initial steps toward the simplification of sizes and varieties of punches and dies were taken here at a meeting of manufacturers held on Friday of last week under the auspices of the Division of Simplified Practice, Department of Commerce. The meeting was presided over by Edwin S. Ely.

Those attending expressed the view that there is an over-diversity in the number of sizes and varieties of punches and dies and that the regular procedure of the department would be helpful in securing the support and cooperation of the industry. With a view to framing a tentative simplified practice recommendation to be presented to a general conference of manufacturers, distributors and users, the following were appointed as a committee to survey current practice as a basis for a simplified list of sizes:

H. C. Hungerford, chairman Pratt & Whitney Co., Hartford; Joseph Bischoff, Cleveland Punch & Shear Works Co., Cleveland; G. W. Moreton, Consolidated Machine Tool Corporation of America, Wilmington, Del.; F. E. Templeton, F. E. Templeton Mfg. Co., Lancaster, Pa.

Domestic sales of oak leather belting reported by the Leather Belting Exchange, representing about 60 per cent of the total product, were for week ended Sept. 18, 85,428 lb., valued at \$147,193. Total sales for the preceding (Labor Day) week amounted to 74,755 lb., valued at \$128,205, and for the corresponding week of 1925, to 85,198 lb., valued at \$144,837.

NEW ENGLAND'S INDUSTRY

Conclusions Based on a Survey of Foundries and Machine Shops

The position of the New England foundries and machine shops as they face the competition of other sections of the country has been surveyed by the Committee on New England Industries of the Boston Chamber of Commerce. "New England's economic environment," the report says, "has been found satisfactory. In all types of product investigated, progress to the end of the war has been found to be good. Since the war, however, and especially since 1921, New England has not made satisfactory progress. There have been no economic changes to justify this reaction. The responsibility lies solely with New England's industrial forces."

Data from a wide range of sources including a comparative analysis of 27 of New England's leading foundries and machine shops have been assembled to support the conclusions. The committee speaks with frankness and force in recommending to their fellow administrators and to the public that they:

Recognize that, with equitable transportation rates, distance from sources of raw material or markets is not an insuperable barrier to continuous growth of these industries.

Increase relative production of highly fabricated yet standardized products, to further minimize the percentage of transportation cost and thus take advantage of regional skill.

Bring the public to realize the inter-dependence of industrial and community life and the necessity for team work.

Stabilize production through diversification of lines of product and of market.

Investigate the possibilities of mergers based on sound principles of economy.

Analyze markets critically to form an adequate basis for manufacturing and sales policies.

Develop export fields through systematic plans.

Seize the advantages of water shipment to Atlantic and Pacific United States ports.

Adopt and develop standards of labor performance which

would increase skilled labor, increase earnings of workers and lower production costs.

Develop supply of skilled labor through systematic training.

Introduce budgeting methods.

Develop effective production control to facilitate deliveries and assure regularity of operation.

Introduce modern cost accounting principles even in the smallest plants, to properly determine both direct and indirect costs and aid in the fixing of sales prices.

Examine plant to see what equipment should be replaced to produce highest possible quality and quantity at lowest cost.

Adopt an open-minded attitude to change so as to overcome the stagnation due to tradition and to assure more effective methods of production and distribution.

New England's natural handicaps are insignificant and more than balanced by her advantages. The responsibility for success or failure lies solely within herself.

The members of the special committee in charge of the Foundry and Machining survey are Philip M. Tucker, chairman, Philip M. Tucker Co., Boston; John G. Aldrich, New England Butt Co., Providence, R. I.; E. H. Ballard, General Electric Co., Lynn, Mass.; E. P. Blanchard, Bullard Machine Tool Co., Bridgeport, Conn.; H. P. Blumenauer, Arcade Malleable Iron Co., Worcester; Howard Coonley, Walworth Co., Boston; George A. Cutter, Thomson Electric Welding Co., Boston; Paul C. DeWolf, Brown & Sharpe Mfg. Co., Providence; John J. Duggan, Chapman Valve Co., Springfield, Mass.; Ralph E. Flanders, Jones & Lamson Machine Co., Springfield, Vt.; M. J. Hastings, Reed-Prentice Co., Worcester; H. B. Johnson, General Fire Extinguisher Co., Providence; Robert A. Leeson, Universal Winding Co., Boston; Thorvald S. Ross, Rivett Lathe & Grinder Corporation, Brighton, Mass.; Joseph B. Sessions, Sessions Foundry, Bristol, Conn.; Henry K. Spencer, Blanchard Machine Co., Cambridge, Mass.; Frank M. Weymouth, Hunt-Spiller Mfg. Corporation, South Boston, Mass.; Walter M. White, Vermont Snath Co., Springfield, Vt. In the drafting of this survey the committee had the assistance of the Thompson & Lichtner Co., Inc., engineers, Boston.

Detailed references to the report will be given in later issues of THE IRON AGE.

Rolling Operations at 90 Per Cent in Mahoning Valley

YOUNGSTOWN, Oct. 5.—Production schedules this week in the Mahoning Valley show that rolling mills are averaging 90 per cent. Of 127 sheet mills in the Mahoning Valley, 118 are under power. Open-hearth and Bessemer plants are averaging 85 to 90 per cent.

At its Indiana Harbor, Ind., works, the Youngstown Sheet & Tube Co. is operating 16 of 24 tin mills and its tinning department is running at 75 per cent.

In the Youngstown district, 27 of 40 blast furnaces are active, representing 80 per cent of the existing capacity.

Sheet mills have a backlog of from 45 to 60 days' operations.

Scrap metals are exhibiting more strength in this area, with heavy melting steel commanding \$17.50 and hydraulically compressed sheets \$16.50. These prices are up 50 cents per ton above recent minimum quotations. One important steel maker has made purchases at these figures.

Increased Export Prices

WASHINGTON, Oct. 5.—Based on cable dispatches of Oct. 1 and 2 from Commercial Attaché Chester Lloyd Jones, Paris, the Department of Commerce today issued a statement saying that the export price of merchant steel has already been increased 15s., sterling, by the cartel. The f.o.b. Antwerp price is up 10s. with French domestic prices for the same products now 904 fr., an increase of 140 francs. The expectation, according to these cables, is that England, Poland and Czechoslovakia will join the combine. The sharpest competition expected by the combine with American steel, it is declared, is likely to develop in Latin America and the Far East.

Trustees Named for Rosenwald Industrial Museum

The Rosenwald industrial museum, to be built in the reconstructed Fine Arts Building in Jackson Park, a relic of Chicago World's Fair days, has been incorporated with a board of 18 citizens as trustees. The trustees, names are as follows: Robert P. Lamont, vice-president American Steel Foundries; Edward F. Carry, president Pullman Co.; Theodore W. Robinson, Illinois Steel Co.; Charles Piez, Link-Belt Co.; Joseph T. Ryerson, Joseph T. Ryerson & Son, Inc.; William R. Abbott, president Illinois Bell Telephone Co.; Sewell L. Avery, president United States Gypsum Co.; Charles H. Markham, Illinois Central railroad; John V. Farwell, John V. Farwell Co.; T. E. Donnelley, president R. R. Donnelley Co.; Rufus C. Dawes, Julius Rosenwald, Sears, Roebuck Co.; Albert A. Sprague, Robert W. Stewart, Standard Oil Co.; Harold H. Swift, Charles T. Thorne, Frank O. Wetmore, and Leo F. Wormser, attorney.

In a three-reel moving picture entitled "Behind the Pyramids," the National Carbon Co., Inc., Cleveland, shows in an effective way the manufacture, application and operation of carbon brushes and other carbon products used in the electrical industry. The picture will be shown before technical society meetings, operating department groups, and engineering college classes.

The Irving Iron Works, Long Island City, N. Y., has held a sales convention at the Hotel Astor, New York, attended by representatives from its 30 selling offices throughout the country. The company manufactures subway flooring and metal stair treads.

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A. I. FINDLEY, *Editor*

W. W. MACON, *Managing Editor*

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Europe's Steel Agreement

LONG expected, the actual agreement by steel makers of Germany, France, Belgium and Luxemburg to form a cartel is really a ratification of plans known in some detail for a good many weeks. Readers of THE IRON AGE have been informed of these proposals from time to time. Germany and France, under political and economic urgings which could not much longer be put off, have decided that the coal of the one and the ore of the other must work for the steel industries of both, also that an agreement to prevent over-production in steel is their one salvation from a profitless depletion of mineral resources that cannot be replaced. Naturally Belgium and Luxemburg, with a combined steel capacity of 5,750,000 tons of ingots and castings, were necessary to the success of any Franco-German accord, and thus the cartel takes in at the start an annual capacity of 34,500,000 tons of "raw steel," with production allotments amounting to 27,528,000 tons for the first year.

As was indicated in our Berlin and Paris correspondence several weeks ago, the main aim of the sponsors for the new agreement is to adjust production to market demand and avoid the losses which have resulted from some of the competitive selling of the past year. On behalf of the German negotiators it was given out in August that the intention was "to control output, determine the actual production and selling capacities of the various countries and to maintain free competition, at the same time preventing unrestricted over-production." It is now reiterated that there is no agreement as to a minimum export price, one reason being that a scheduled price would put a weapon in the hands of countries not included in the arrangement.

There is the familiar cartel machinery for apportioning tonnages, payments of \$4 a ton being made to the syndicate for any excess of production over the quarterly quota, while \$2 a ton is allowed from the syndicate fund to the extent that any country's shipments fall short of its allotment.

The question most frequently raised in comment on the new agreement is how it will affect the steel makers of the United States and Great

Britain. The main avowed purpose of the combine is to protect the four member countries against each other and to stabilize their respective markets. Just how that purpose will work out practically only time will show. Already, however, in spite of assurances that "free competition" will prevail, advances in steel products ranging from 10 shillings to 15 shillings are reported in Continental markets. So far as Great Britain is concerned, there is no reason to expect any lessening of the stream of semi-finished steel that has poured in from the Continent in the past two years; and so long as the coal strike continues these shipments will be at a rate mainly limited by the ability of British rolling mills to import a sufficient fuel supply to work up such steel.

While there is no reason to believe the new pool has any program of aggression against the steel industry of the United States, it need not be expected to be any less active than its members have been in the past year in seeking to enter this market. Some of them have quoted very low prices to American buyers, as much as \$10 a ton in some cases below those of domestic mills. Deep cuts were apparently thought necessary to overcome consumers' scruples against bringing in foreign steel. What is likely to happen now is that these concessions will not be so liberal; indeed, the advance in European prices will compel some narrowing of the gaps recently existing here between foreign and domestic prices. Otherwise the anti-dumping act would promptly come into play.

All European steel cartels have had one unvarying aim—the maintenance of high prices in domestic markets to offset the concessions made in securing a maximum business in the markets of the world. The new consortium represents no departure in this respect, and therefore holds out no promise to this country that the inflowing stream of European steel is about to be dammed.

"FIRE Prevention Week" will be two-thirds gone when this issue reaches most readers. It may be presumed that many plants are undergoing a thorough clean-up, however orderly things may have been kept for 51 weeks. If the survey has

uncovered some unexpected fire hazards, the value of the attempt to establish a national fire prevention week becomes specifically obvious. Thought on the subject is calculated also to lead to considering if replacement costs of buildings and the cost of insurance protection are properly covered in the overhead factor of price of product.

Operations and Capacity

SELLERS of steel, observing the high rate at which the industry is operating, relative to its assumed capacity, often feel that they ought to secure higher prices. Many buyers of steel, finding very strenuous competition in their sales, feel that they should be given the closest possible prices on steel. They are apt to claim that their particular industry is running at a lower percentage of "capacity" than is the steel industry.

Among the steel-consuming industries, however, there is on the whole not much statistical information showing capacity. Percentages of labor employment are sometimes cited, but it is well known that labor efficiency has increased substantially in the past few years, and not so many men may be needed to operate a plant at its limit. Then a large amount of steel is used in which there is no semblance of "capacity." Oil and gas well drilling, line pipe laying and rail laying are examples.

In a few lines there is a conception of capacity which carries some weight. In fabricated structural steel work the Department of Commerce uses 305,000 net tons a month as capacity. On that basis the shipments of such steel work in the first eight months of this year represented 70 per cent of capacity. Production of passenger automobiles may be estimated to have run close to 80 per cent of capacity thus far this year. Freight car building has certainly been at a very low rate.

The familiar reference to the steel industry's operating rate, however, does not work out in a practical way. The basis is ingot production, and ingots are not a merchantable commodity. The finished steel lines are sold each by itself, and the individual lines have on the whole decidedly lower operating rates relative to their respective capacities. This arises from a condition that has always prevailed, of steel finishing capacity being in excess of steel making capacity. The amount of this excess is not known, but it is probably not far out to put it at 25 per cent. That is, to operate all finishing mills and departments in full would require 25 per cent more steel than can be made.

According to the American Iron and Steel Institute's findings, the production of steel ingots thus far this year has been about 86 per cent of "theoretical capacity," but 96 per cent of "practical capacity." One may take 90 per cent as a compromise. With an assumption of 25 per cent excess of finishing capacity, the average of finishing operations then would be 72 per cent. It is conservatively high, at all events, to estimate the average of finishing mill operations at 75 per cent of their total capacities. That explains why it is not so easy to get steel prices up as it may seem to some, and the buyers of steel are getting more

competition among their vendors than they may imagine when they think simply of steel ingot percentages.

What the Farmers Want

SENATOR McNARY has told the President that the farmers are as uneasy as ever and that he is contemplating another introduction of the McNary-Haugen bill.

Many persons, including Charles M. Schwab, have offered solutions of the so-called agrarian problem, most of them futile. The panacea of the more conservative politicians is to lend more money to the farmers. In fact, credit for them has been too easy and too bountiful in the past. Mr. Lowden preaches cooperation, which is a grand thought, but the farmer is not psychologically cooperative. Mr. Ford advocates increased mechanization of the farms, which also is a masterly thought, but is subject to severe limitations.

Mr. Schwab thinks, correctly, that the farms should be organized in larger units and operated with a better sense of business, but this runs counter to the psychology of the farmer who does not want to surrender his independence to superior direction.

The corn planters and wheat growers want none of these things. What they want, in one guise or another, is a guarantee of a minimum price. Flying in the face of economic law, as does that wish, the only thing to do is to tell them that it will not be granted.

It is well to bear in mind that there are many kinds of farmers, of whom the corn planters and wheat growers constitute only a small proportion, and their interests are conflicting. Thus, increases in the prices for corn and wheat, while good for that group of producers, is bad for the dairy farmers who are buyers of those cereals.

The one thing that the many species of farmers have in common is their general grievance, founded on common mismanagement and their idea that townspeople and especially Wall Street in some way stack the cards against them.

Sharper Teeth in Bankruptcy Act

AS amended at the last session of Congress the Federal bankruptcy act has been tightened up to discourage dishonest debtors, severe prison sentences being provided for those whose insolvencies are tainted with fraud. While the metal trades have not suffered from the fraudulent bankrupt so much as some other lines of business, there have been occasional instances of fraud against legitimate creditors in that industry.

The bankruptcy act had been in operation long enough for its weaknesses and the means of utilizing them dishonestly to be searched out by unscrupulous business men and lawyers. In a sense questionable practice had become standardized. Naturally, at the same time, those who wished to see the purpose of the law carried out, which really was to give the honest but unfortunate man a chance to start in business over again, likewise recognized the faults of the act.

Several of the amendments are directed toward

making collusive petitions less attractive, and toward discouraging a prospective bankrupt from choosing involuntary proceedings when he is in fact a willing bankrupt. Formerly involuntary proceedings had the advantage over the voluntary—in the eyes of the crooked bankrupt—that in the latter an inventory of assets had to be filed more promptly. The law now evens up matters, for in either case inventories must be filed within ten days after the starting of proceedings. Also, under the law as it stood, an involuntary bankrupt could be discharged from a second bankruptcy almost immediately, while a voluntary bankrupt could not be discharged from a second bankruptcy in less than six years after discharge from the first. The law now fixes the limit at one discharge from bankruptcy in six years, whether it be voluntary or involuntary.

Frequent injustices have been worked by means of fraudulent offers of composition. Some of the large creditors, under secret agreement with the bankrupt, used their influence with other creditors to accept a low composition offer. In exchange for their action they received more than their ratable share, the other creditors got less than their due, while the bankrupt retained a substantial portion of the assets. This manipulation was made the easier because when a bankrupt made an offer of composition the procedure of adjudication automatically was staid. Under the amended act the procedure is not necessarily suspended by an effort at composition.

Various other strengthening points, combined with the major changes as enumerated, and in connection with the penal provisions, represent a definite step forward. In case of crime the penalties are severe. The limit of imprisonment is raised from two to five years. Prosecution for crime in bankruptcy may be begun within three years of its commission, instead of within one year, making less agreeable the too common practice of a suspect's withdrawing from the community, to return only when the Statute of Limitations has relieved him of danger.

The Rise in Tin Prices

ALTHOUGH the United States produces no pig tin, except for the recovery of about 30,000 tons of secondary tin annually, it consumes 60 per cent or more of the world's production. In 1925 and so far in 1926 the demands of the consuming industries of the United States, in which the tin plate producers come first and automobile manufacturers second, have been unusually large and prices recently have reached a peak not attained since shortly after the close of the world war.

Under ordinary conditions a growing demand for any product would stimulate the producers to greater efforts to increase the supply, but such is not the case with tin. Since the major part of the world's production is under British and Dutch control, there is a suggestion in the tin trade of a working arrangement to regulate production and shipments in a manner somewhat similar to that which up to a few months ago prevailed in rubber.

While there has been no actual shortage of tin, the visible supply both in the world and in the United States has been declining steadily for sev-

eral years. In May the world supply was 18,045 tons and the supply in the United States was 10,473 tons. At the end of August the world supply had decreased to 13,352 tons and the American supply to 6,811 tons.

In 1924 the United States consumed 65,236 gross tons, but last year consumption in this country increased to 76,265 tons, and indications are that the total for this year will be about the same, as the arrivals in the first eight months were 52,790 gross tons, as compared with 52,995 tons in the first eight months of 1925. Total shipments from the Straits Settlements in 1925 were 78,952 tons of which 53,772 tons was shipped in the first eight months, as compared with 49,603 tons to Aug. 31 of this year. Thus it appears that despite the large demand in the United States the production of Straits tin this year will fall considerably short of last year's output.

Quotations at New York have been fluctuating of late between 69 cents and 71 cents per pound. In 1921, when the tin miners had the most disastrous year in their history, pig tin at New York dropped to 26 or 27 cents per pound. The present scarcity and high prices are probably a natural aftermath of that condition, which, as is well known, brought about a tin pool, backed by the Dutch Government, the Federated Malay States Government and some large private interests, in order to save the tin mining industry from grave disaster. Until the large amount of tin held by that pool had been liquidated, the market did not rise materially. It was not until 1923 that the price went above 40 cents per pound, while the average for 1924 was slightly over 50 cents.

During the time the pool was in operation the production of pig tin was kept under careful control so that there would be no surplus to interfere with the gradual liquidation of the 1921 unsold stocks. The Netherlands Indies Government, which derives a substantial part of its revenues from tin, has carried out in recent years a definite policy, regulating the output from its mines to conform to the needs of its budget. To a greater or less extent the other miners in the Straits district appear to be stabilizing production, so that there is no immediate prospect of any increase in the supply from that quarter. Bolivia, which was looked upon hopefully as a potential producer, has failed to meet expectations, and the Singapore market is still the main dependence of American consumers.

THE American Society of Agricultural Engineers at a recent meeting discussed mechanizing and systematizing farming operations; in other words, increasing the size of farm units and industrializing them. Without any doubt such things are in conformity with theory and economically meritorious. However, their consummation would be no solution of the agrarian unrest, for the reason that there would then be no longer any grumbling proprietors but instead thereof a complaining proletariat.

The greatest number of cars in the history of the railroads was loaded with revenue freight during the week ended on Sept. 18, according to the car service division of the American Railway Association. The total for the week was 1,187,011 cars, exceeding by 35,665 cars the previous record established the week ended on Sept. 4.

OPEN-HEARTH PRACTICE

Meeting of Steel Makers Stresses Need of Blast Furnace Cooperation

PITTSBURGH, Oct. 5.—Getting the blast furnace operators to think and act in terms of open-hearth practice was the keynote of the opening session of the fourth conference of the Open-Hearth Committee of the American Institute of Mining and Metallurgical Engineers at the William Penn Hotel here this morning.

R. L. Cain, open-hearth superintendent, Bourne-Fuller Co., Cleveland, in his paper entitled "The Manufacture of Forging Steel by the Basic Open-Hearth Process," in which he considered the character of the charge, the working of the heat, the tapping and ladle additions, teeming and metallurgy, emphasized that heats of steel made properly and using correct charges will give little trouble as regards defective billets. Therefore the charge must be one which will offer as little resistance as possible to the correct manufacture of the steel. Scrap can be pretty well classified and controlled within reasonable limits.

Pig iron, however, is often not of the required analysis, or, if the analysis is correct, the iron may not work properly in the furnace. "It is the segregation," Mr. Cain said, "which takes place in the furnace that causes the serious trouble and there seems to be no way of rectifying it." He expressed the hope that serious thought would be given to the effect which the charge, especially pig iron, has on the quality of the steel produced.

The discussion of the paper converged largely on

pig iron and scrap in the open-hearth charge. Commonly, those participating in the discussion stressed the deleterious effects of the off-grade iron, particularly in respect to silicon content, the non-uniformity of analysis, and the apparent tendency of the blast furnacemen to give more attention to physical than the chemical condition of the pig iron.

Some of the speakers traced the trouble back to the present day practice of running the furnaces too fast in the effort to get out big tonnages. Blisters, pipes and scrabs in steel all were blamed on inferior pig iron, in the making of which too much scrap was used. Too much scrap in the open-hearth charge was another cause of trouble.

There was a strong plea that the blast furnacemen turn out iron of standard basic analysis and aim to keep the analysis, chemical and physical, as uniform as possible and for as long as possible. Really good iron, it was declared, would overcome many of the ills of poor scrap.

"The Basic Open-Hearth Charge" was the subject of Paul H. Schaeffer, until recently open-hearth superintendent of the United Alloy Steel Corporation, at the afternoon session.

E. A. Whitworth, Gathmann Engineering Co., Baltimore, chairman of the committee, presided, and there was an early registration of about 70 steel plant and open-hearth executives from as far west as Pueblo, Colo., and as far south as Atlanta, Ga. The sessions will continue tomorrow and will merge Friday with the general meeting of the American Institute of Mining and Metallurgical Engineers, which is holding its 134th meeting here this week. Thursday will be plant visitation day.

Increase Rates on Structural Steel to Shreveport

WASHINGTON, Oct. 5.—Proposed increases in the proportional rates on structural iron and steel, in carloads, from Natchez and Vicksburg, Miss., to Shreveport, La., applicable on traffic originating east of Vicksburg or Natchez were found justified by the Interstate Commerce Commission in a report made public yesterday and the rates were ordered into effect on Oct. 11. The schedules were filed by the Louisiana & Arkansas and the Vicksburg, Shreveport & Pacific railroads which increase the rate from Natchez and Vicksburg to Shreveport from 13.5c. to 27.5c. per 100 lb.

Ohio Foundries Prospering

"We see no serious drawbacks to a continuance of good business for some months to come," says the Ohio Foundrymen's Association in its report dated Sept. 25. August production in the foundries which are members of the association was 87.6 per cent of a normal melt, compared with 76.8 per cent in July and with 76 per cent in August, 1925. The total production for the month was 20,846 tons, the normal melt of the foundries reporting being 23,791 tons. Non-ferrous operations increased in August to 79 per cent, July standing at 72 per cent and August, 1925, at 60.5 per cent.

Coke Production in 1925

WASHINGTON, Oct. 5.—Final returns to the Bureau of Mines show that the total output of by-product coke in 1925 was 39,912,159 net tons and of beehive coke, 11,354,784 tons. Of the by-product coke produced, 12,368,916 tons were sold, 2,641,729 tons going to affiliated companies. In the beehive coke industry 2,032,944 tons were used by the producer and 9,495,023 tons were sold, and of the sales 3,479,728 tons went to affiliated corporations. The sum of the sales and the quantities used by the producer but not sold, said a statement issued by the bureau, was in excess of the production, the difference being drawn from stocks.

Mond Nickel Company Subsidiary to Make Pure Nickel Domestic Utensils

Sir Alfred Mond, chairman of the board of the Mond Nickel Co., Ltd., London, Brunner, Mond & Co., London, Victoria Syndicate, Ltd., of Canada, Henry Wiggins & Co., London, and the Amalgamated Anthracite Co., Swansea, South Wales, has returned to England, after a month's visit in the United States and Canada. During this trip, Sir Alfred, accompanied by Robert, Emile and Philip Mond, also of the Mond Nickel Co., visited the company's ore properties in the Sudbury area of Ontario, the smelter at Coniston, Ont., and the recently formed subsidiary for the United States, the American Nickel Corporation, Clearfield, Pa.

The subsidiary company, using Mond nickel, produced under the process developed by Dr. Ludwig Mond about 1900, is entering into the manufacture of nickel products, including rods, bars, sheets, tubes, wire and castings of 99 per cent pure nickel as well as 70 per cent and other alloys. Among the more highly manufactured products of the company are pure nickel condenser tubes and turbine blades and a line of domestic utensils for use in large institutions as well as the average household. Sir Alfred points out that while cooking equipment of pure nickel has been in use in European countries for many years, its use in the United States has been limited. It is also intended to manufacture large, pure nickel equipment for use in the pasteurization of milk and for similar purposes.

In addition to his connection with various British companies, Sir Alfred Mond has been a member of Parliament for the past 20 years and was Minister of Public Works and later Minister of Health in the coalition cabinet during the war.

Celite and blast furnace slag have been incorporated in concrete used in building condenser pits for the St. Louis Coke & Iron Corporation at Granite City, Ill., built by the Baumes-McDevitt Construction Co., St. Louis. A 1:3:5 mix was used with the slag as coarse aggregate, and to avoid a great excess of water and resulting honeycombing, Celite was introduced into the mix at the rate of 3 lb. per bag of cement.

Increase in September Iron Output

Complete Returns Show Daily Rate 1302 Tons or 1.25 Per Cent Larger Than August
—Net Gain of 3 Furnaces

A MODERATE increase in the country's pig iron production was registered in September. Complete returns from all furnaces show the daily rate last month to have been 104,543 gross tons per day or 1302 tons more than the rate in August. This is a gain of 1.25 per cent. In August the decline from July was less than one per cent. The increase last month is the first since April.

	Steel Works	Merchant*	Total
September, 1925	70,300	20,573	90,873
October	76,464	21,064	97,528
November	77,262	23,505	100,767
December	81,552	23,301	104,853
January, 1926	83,867	23,107	106,974
February	81,148	23,260	104,408
March	85,841	25,191	111,032
April	89,236	25,768	115,004
May	86,682	25,622	112,304
June	82,186	25,658	107,844
July	79,392	24,586	103,978
August	78,216	25,025	103,241
September	81,224	23,319	104,543

*Includes pig iron made for the market by steel companies.

	Sept. (30 days)	Aug. (31 days)	July (31 days)	June (30 days)
New York and Mass.	211,362	196,706	206,252	195,699
Lehigh Valley.....	77,523	80,506	84,223	91,034
Schuylkill Valley....	65,101	67,550	66,531	68,190
Lower Susq. and Lebanon Valleys...	35,545	35,167	35,945	35,094
Pittsburgh district..	688,000	668,100	622,772	653,044
Shenango Valley....	96,841	108,719	117,504	134,156
Western Penna....	180,219	127,514	127,622	123,924
Maryland, Virginia and Kentucky....	84,172	85,171	82,963	85,901
Wheeling district...	105,391	108,429	108,110	117,838
Mahoning Valley....	329,488	323,305	317,307	313,633
Central and North- ern Ohio.....	333,951	351,852	348,371	323,904
Southern Ohio.....	38,082	36,071	48,468	49,438
Illinois and Indiana	576,506	644,907	668,564	661,758
Mich., Minn., Mo., Wis., Colo. and Utah	127,860	121,357	137,135	137,753
Alabama	230,345	238,812	246,124	238,491
Tennessee	5,907	6,313	5,447	5,452
Total	3,136,293	3,200,479	3,223,338	3,235,309

Furnaces	Total Stacks	In Blast	Oct. 1— Capacity per Day	In Blast	Sept. 1— Capacity per Day
New York:					
Buffalo	21	13	6,090	13	5,670
Other N. Y. and Mass.	6	3	1,100	3	900
New Jersey.....	3	0	....	0	....
Pennsylvania:					
Lehigh Valley.....	12	6	2,485	6	2,310
Spiegeleisen	2	1	100	1	130
Schuylkill Valley....	12	5	2,170	5	2,110
Susquehanna Valley.	6	2	900	2	860
Ferromanganese ..	1	0	....	0	....
Lebanon Valley.....	4	1	220	1	210
Ferromanganese ..	2	1	65	1	60
Pittsburgh District..	52	38	22,545	37	20,400
Ferro. and Spiegel	4	3	355	3	350
Shenango Valley....	14	7	3,525	7	3,570
Western Pennsylvania	19	9	4,265	8	3,830
Ferro. and Spiegel	2	2	340	2	280
Maryland	6	5	2,145	5	2,075
Wheeling District....	12	7	3,510	7	3,490
Ohio:					
Mahoning Valley....	26	20	10,935	19	10,230
Central and Northern	22	19	11,130	19	11,000
Southern	13	5	1,270	6	1,500
Illinois and Indiana...	43	31	19,330	31	20,620
Mich., Wis. and Minn..	12	7	2,690	7	2,620
Colo., Mo. and Utah...	7	4	1,565	3	1,300
The South:					
Virginia	16	1	225	1	240
Ferromanganese ..	1	1	80	1	75
Kentucky	5	1	355	1	355
Alabama	34	23	7,890	23	7,700
Ferromanganese ..	1	0	....	0	....
Tennessee	12	1	195	1	200
Total	370	216	105,480	213	102,085

The production of coke pig iron for the 30 days in September was 3,136,293 tons or 104,543 tons per day as compared with 3,200,479 tons or 103,241 tons per day for the 31 days in August. The September daily rate exceeds that of both July and August, and is the largest September output since 1918 when the rate was 113,942 tons per day. A year ago the rate in September was only 90,873 tons per day.

There was a net gain of 3 furnaces during September, 11 having been blown in and 8 shut down. In August there was a net loss of 3 furnaces.

Capacity Active Oct. 1

On Oct. 1 there were 216 furnaces active as compared with 213 on Sept. 1. The estimated daily capacity of the 216 furnaces, blowing on the first of this month, was 105,480 tons per day as contrasted with 102,085 tons per day for the 213 furnaces active on Sept. 1. Of the 11 furnaces blown in, 2 were Steel Corporation stacks, 8 belong to independent steel

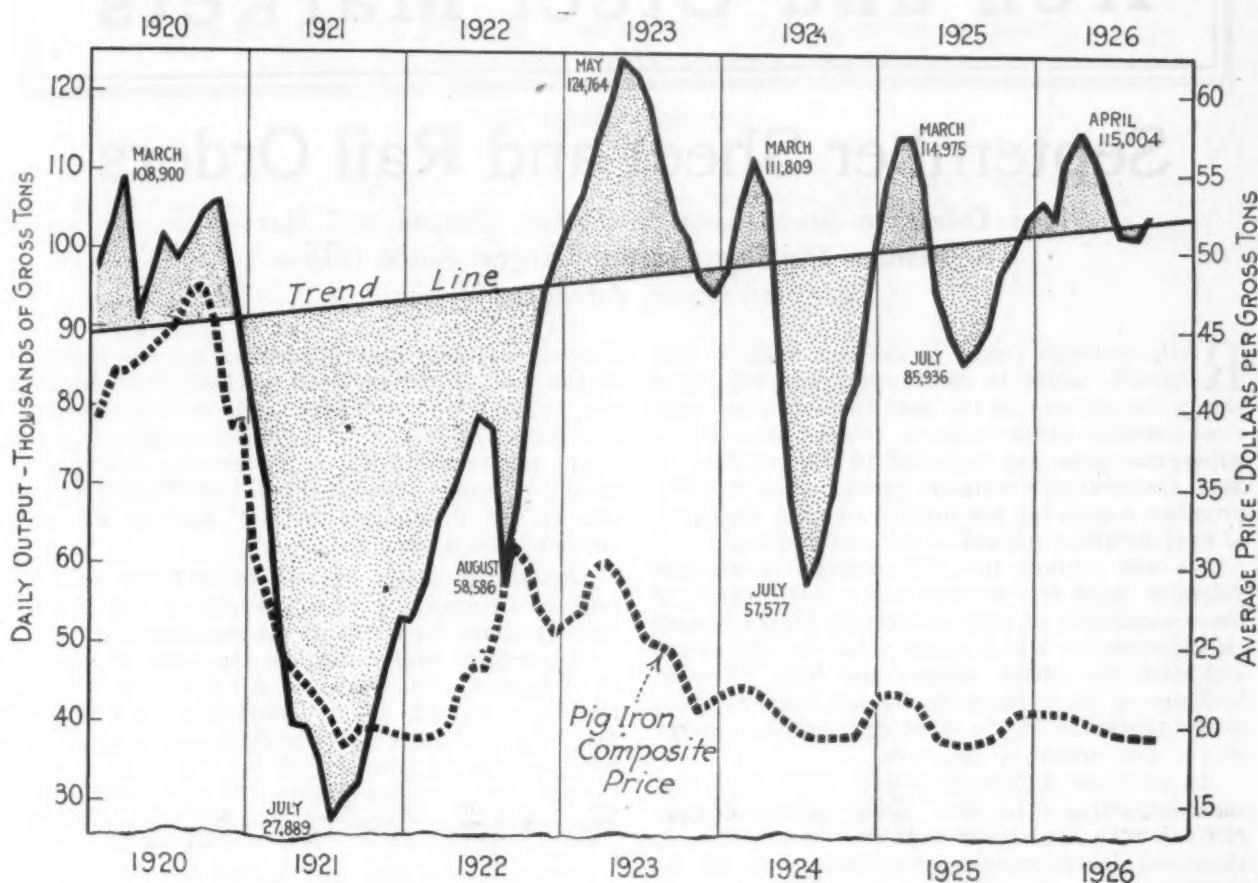
	Total Iron, Spiegel and Ferro		Spiegeleisen and Ferromanganese*		
	1925	1926	1925	1926	
Jan. ...	2,692,537	2,599,876	23,578	5,418	29,129
Feb. ...	2,539,785	2,272,150	18,184	4,910	22,309
Mar. ...	2,812,995	2,661,092	20,062	5,449	24,064
Apr. ...	2,514,828	2,677,094	21,448	5,341	24,134
May ...	2,306,887	2,687,138	22,679	5,294	23,159
June ...	2,113,566	2,465,583	19,836	4,972	25,378
½ year ..	14,980,598	15,362,933	125,787	31,384	148,173
July ...	2,037,160	2,461,161	16,614	5,074	26,877
Aug. ...	2,124,439	2,424,687	18,867	4,939	23,557
Sept. ...	2,109,205	2,436,733	18,381	5,162	25,218
Oct. ...	2,370,382	.....	21,421	5,071	.....
Nov. ...	2,317,888	.....	25,490	6,375	.....
Dec. ...	2,528,120	.....	26,072	7,766	.....
Year ..	28,467,792	.....	252,632	65,761	.....

*Includes output of merchant furnaces.

	1924	1925	1926
Jan.	3,018,890	3,370,336	3,316,201
Feb.	3,074,757	3,214,143	2,923,415
Mar.	3,466,086	3,564,247	3,441,986
Apr.	3,233,428	3,258,958	3,450,122
May	2,615,110	2,930,807	3,481,428
June	2,026,221	2,673,457	3,235,309
½ year.....	17,434,492	19,011,948	19,848,461
July	1,784,899	2,664,024	3,223,338
Aug.	1,887,145	2,704,476	3,200,479
Sept.	2,053,264	2,726,198	3,136,293
Oct.	2,477,127	3,023,370	.....
Nov.	2,509,673	3,023,006	.....
Dec.	2,961,702	3,250,448	.....
Year*	31,108,302	36,403,470	.....

*These totals do not include charcoal pig iron. The 1925 production of this iron was 196,164 tons.

	1922	1923	1924	1925	1926
Jan.	53,063	104,181	97,384	108,720	106,974
Feb.	58,214	106,935	106,026	114,791	104,408
Mar.	65,675	113,673	111,809	114,975	111,032
Apr.	69,070	118,324	107,781	108,632	115,004
May	74,409	124,764	84,358	84,542	112,304
June	78,701	122,548	67,541	89,115	107,844
½ year....	66,578	115,147	95,794	105,039	109,660
July	77,592	118,656	57,577	85,936	103,978
Aug.	58,586	111,274	60,875	87,241	103,241
Sept.	67,791	104,184	68,442	90,873	104,543
Oct.	85,092	101,586	79,907	97,528	.....
Nov.	94,990	96,476	83,656	100,767	.....
Dec.	99,577	94,225	95,539	104,853	.....
Year	73,645	109,713	85,075	99,735	.....



Daily Pig Iron Output in September About 1.25 Per Cent Larger Than in August; Composite Prices Unchanged
Inclined line represents the gradually increasing theoretical needs of the country, and shows that production is slightly below the so-called normal. Dotted line represents THE IRON AGE composite price

companies and 1 was a merchant furnace. The 8 furnaces shut down last month are credited as follows: 4 to merchant companies, 3 to independent steel companies and 1 to the Steel Corporation.

Manganese Alloy Output

The manganese alloy output last month was 28,143 tons, of which 25,218 tons was ferromanganese or the fourth largest production this year. The spiegeleisen production in September was 2925 tons or the smallest this year.

Total Furnaces Increased

The blowing in late last month of the new furnace of the Mystic Iron Works in Massachusetts increases the total number of furnaces, regarded as capable of making pig iron, to 370.

Furnaces Blown In and Out

Among the furnaces blown in during September were the new Mystic furnace of the Mystic Iron Works in Massachusetts; No. 2 furnace of the Pittsburgh Steel Co. in the Pittsburgh district; H furnace at the Cambria plant of the Bethlehem Steel Corporation in western Pennsylvania; D furnace at the Sparrows Point plant of the Bethlehem Steel Corporation in Maryland; No. 6 Ohio furnace of the Carnegie Steel Co., No. 2 Haselton furnace of the Republic Iron & Steel Co. and No. 2 Hubbard furnace of the Youngstown Sheet & Tube Co. in the Mahoning Valley; one Calumet furnace of the Wisconsin Steel Co. in Illinois; one furnace of the Colorado Fuel & Iron Co. in Colorado; No. 4 Bessemer furnace of the Tennessee Coal, Iron & Railroad Co., and the Alabama City furnace of the Gulf States Steel Co. in Alabama.

Among the furnaces blown out in September were

the No. 2 furnace of the Northern Iron Co. in New York; E furnace at the Sparrows Point plant of the Bethlehem Steel Corporation in Maryland; No. 1 Haselton furnace of the Republic Iron & Steel Co. and the Anna furnace in the Mahoning Valley; the Belfont furnace in southern Ohio; one Gary furnace in the Chicago district, and No. 3 furnace of the Woodward Iron Co. and one furnace of the Sloss-Sheffield Steel & Iron Co. in Alabama.

Blast Furnace Notes

After being in continuous operation for over seven years, during which time approximately 1,000,000 tons of pig iron were produced, blast furnace B of the Mayville Iron Co., Mayville, Wis., was blown out recently. The furnace will be remodeled and enlarged and provided with new gas cleaning equipment, electric bell rigs, etc. The work will be done by Arthur G. McKee & Co., engineer and contractor, Cleveland.

A Bethlehem furnace at Steelton, Pa., will be put in blast this week.

The Otis Steel Co. will shortly begin the erection of an additional 100-ton open-hearth furnace, which it expects to have ready for operation in January. The construction work will be done by the company. The Otis company now has four 100-ton open-hearth furnaces, but provided space for eight furnaces in its open-hearth building.

One of the smallest trolley-type locomotives in use in this country is used by the Park Utah Consolidated Mines of Keetley, Utah. This was built by the General Electric Co. and is designed for 18-in. gage track. It has a total weight of 3296 lb.

Iron and Steel Markets

September Sheet and Rail Orders

An Offset to Some Loss in Plates, Shapes and Bars—
September Pig Iron Output Largest Since 1918—
European Cartel Advances Prices

RAIL contracts placed in the last week of September, added to continued heavy buying of sheets for delivery in the next three months, gave steel company order books as of Sept. 30 a better appearance than was indicated 10 days earlier. A Steel Corporation's estimate given out on Tuesday promises a gain for the unfilled tonnage statement of next Saturday instead of the expected loss.

As rail rollings for 1927 will be on no considerable scale for several weeks, continuance of the present rate of steel production hinges largely on the extent to which orders come in, this month and next, for plates, shapes and bars. Present bookings of these products are not equal to those at the beginning of the third quarter, or of either of the two preceding quarters.

In part the difference is due to the fact that some buyers of steel bars whose 1.90c. contracts ran out with September have not been willing to place full fourth quarter requirements on the 2c. basis.

This week's steel ingot production of the Steel Corporation is substantially the same as in the past fortnight. Some independent producers made a small increase in September; but taking the industry as a whole July, August and September showed a uniformity of output quite unprecedented.

Our Pittsburgh report refers to a slight letting down in some classes of finishing capacity, including mills supplying automobile plants. The latter have a considerably reduced schedule in November.

Structural steel lettings are in somewhat less volume. At Chicago, with work ahead averaging about six weeks, fabricating shops are competing sharply, prices going below those of the summer and early fall.

Structural awards for the week were the lowest since April with two exceptions. The total was about 18,000 tons. Included in pending work of 34,000 tons is a garment building in New York calling for 11,000 tons.

Pig iron production last month was larger than for any September since that of 1918, when the war effort was at its height. For the 30 days the total was 3,136,293 tons, or 104,543 tons a day. August, with 31 days, had a greater total, 3,200,479 tons, but a lower daily average, 103,241 tons.

Increase in steel ingot production by independent companies last month appears in a net gain of 5 in active blast furnaces of independents, against a gain of 1 by the Steel Corporation. Merchant furnaces showed a net loss of 3.

Furnaces in blast Oct. 1 numbered 216, with daily capacity of 105,480 tons, against 102,085 tons a day for 213 furnaces on Sept. 1. This is the first gain in active furnaces since April, there being a loss of 9 in May, 3 in June, 4 in July and 3 in August.

Sales of more than 50,000 tons of Southern

iron to cast iron pipe companies are the feature of the week in the pig iron market. With Northern foundry iron furnaces fairly well booked up, and with a reduction of 1700 tons a day in merchant pig iron output in September, sellers are taking a firmer stand. In eastern Pennsylvania and in the Pittsburgh district there is an advance of 50c. a ton.

At Boston a test case is to be made on 500 tons of German pig iron brought in last week. The Treasury Department alleges dumping.

Locomotive orders feature the railroad equipment market. The Seaboard Air Line ordered 50, the Santa Fe, 22, and the Belt Line of Chicago, five. The Louisville & Nashville is now asking for bids on 1500 freight and 28 passenger cars. At Chicago 8000 cars are now under inquiry and three Western lines are expected shortly to ask bids on a total of 15,000.

Chicago mills have just booked 100,000 tons of rails for five roads. The Pennsylvania Railroad opened bids in the week on 22,000 tons of plates, shapes, bars and sheets and 160,000 to 200,000 tons of rails. Rails were quoted \$43 at mill and shapes and bars, 2c. On plates all Eastern quotations were 1.90c., mill.

The first effect of the formation of the European steel cartel was a general marking up of steel about 10 per cent, representing \$2.50 on merchant steel at Antwerp. French domestic prices on some products were increased over 15 per cent and as much as \$4 a metric ton in some cases.

No reduction in the flow of European steel to the United States is to be expected from the new agreement, but with European prices higher, recent sales of foreign steel here at \$10 a ton below domestic prices are not likely to be repeated in view of the anti-dumping act.

A Japanese order for 10,000 tons of rails, for the Imperial Government Railways, is believed to have been placed with the French De Wendel works. With prices of \$35 and \$36 per ton, c.i.f., Japan, a 9000-ton order for a Japanese electric railroad is expected also to go to Europe. Meanwhile a demand is growing in Japan for increased duties to protect the native steel industry.

German by-product coke is gaining a greater foothold in the Pacific Coast market. The latest shipment of 6500 tons was sold at \$12 to \$12.50 at dock, San Francisco.

For ferryboats recently contracted for at San Francisco 3400 tons of steel is required. The Southern California Edison Co. is taking bids on fabricated steel pipe for which about 7750 tons of plates will be required.

THE IRON AGE pig iron composite price, due to advances at Pittsburgh, is now \$19.63 per gross ton after ten weeks at \$19.46, the year's low. The finished steel composite remains at 2.439c. per lb.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Oct. 5, 1926	Sept. 28, 1926	Sept. 7, 1926	Oct. 6, 1925
No. 2 fdy. Philadelphia...	\$21.76	\$21.76	\$21.76	\$21.76
No. 2, Valley furnace....	18.50	18.00	17.50	19.00
No. 2, Southern, Cin'tl....	23.69	23.69	24.19	23.05
No. 2, Birmingham.....	20.00	20.00	21.00	19.00
No. 2 foundry, Chicago*	21.00	21.00	21.00	21.50
Basic, del'd, eastern Pa....	20.75	20.75	20.75	21.00
Basic, Valley furnace....	18.00	17.50	17.50	18.50
Valley Bessemer del. P'gh	20.76	20.26	19.76	21.26
Malleable, Chicago.....	21.00	21.00	21.00	21.50
Malleable, Valley	18.50	18.00	17.50	19.00
Gray forge, Pittsburgh...	19.76	19.26	18.76	20.26
L. S. charcoal, Chicago...	27.04	29.04	29.04	29.04
Ferromanganese, furnace..	88.00	88.00	88.00	115.00

Rails, Billets, etc., Per Gross Ton:	Oct. 5, 1926	Sept. 28, 1926	Sept. 7, 1926	Oct. 6, 1925
O.-h. rails, heavy, at mill..	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	36.00	36.00	34.00	36.96
Bess. billets, Pittsburgh...	35.00	35.00	35.00	35.00
O.-h. billets, Pittsburgh...	35.00	35.00	35.00	35.00
O.-h. sheet bars, P'gh.....	36.00	36.00	36.00	35.00
Forging billets, base, P'gh	40.00	40.00	40.00	40.00
O.-h. billets, Phila.....	40.30	40.30	40.30	40.30
Wire rods, Pittsburgh.....	45.00	45.00	45.00	45.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb..	1.90	1.90	1.90	1.90

Finished Iron and Steel,	Oct. 5, 1926	Sept. 28, 1926	Sept. 7, 1926	Oct. 6, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.22	2.22	2.22	2.12
Iron bars, Chicago.....	2.00	2.00	2.00	1.90
Steel bars, Pittsburgh...	2.00	2.00	2.00	2.00
Steel bars, Chicago.....	2.10	2.10	2.10	2.10
Steel bars, New York.....	2.34	2.34	2.34	2.34
Tank plates, Pittsburgh...	1.90	1.90	1.90	1.80
Tank plates, Chicago.....	2.10	2.10	2.10	2.10
Tank plates, New York...	2.24	2.24	2.24	2.04
Beams, Pittsburgh.....	2.00	2.00	2.00	1.90
Beams, Chicago.....	2.10	2.10	2.10	2.10
Beams, New York.....	2.34	2.34	2.34	2.24
Steel hoops, Pittsburgh...	2.50	2.50	2.50	2.40

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire,	Oct. 5, 1926	Sept. 28, 1926	Sept. 7, 1926	Oct. 6, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	3.00	3.00	3.00	2.95
Sheets, black, No. 24, Chi-				
cago dist. mill.....	3.10	3.10	3.10	3.15
Sheets, galv., No. 24, P'gh	3.85	3.85	3.80	3.75
Sheets, galv., No. 24, Chi-				
cago dist. mill.....	3.95	3.95	3.95	3.95
Sheets, blue, 9 & 10, P'gh	2.30	2.30	2.30	2.25
Sheets, blue, 9 & 10, Chi-				
cago dist. mill.....	2.40	2.40	2.40	2.40
Wire nails, Pittsburgh...	2.65	2.65	2.65	2.60
Wire nails, Chicago dist.				
mill	2.70	2.70	2.70	2.70
Plain wire, Pittsburgh...	2.50	2.50	2.50	2.50
Plain wire, Chicago dist.				
mill	2.55	2.55	2.55	2.55
Barbed wire, galv., P'gh...	3.35	3.35	3.35	3.35
Barbed wire, galv., Chi-				
cago dist. mill.....	3.40	3.40	3.40	3.40
Tin plate, 100 lb. box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:	Oct. 5, 1926	Sept. 28, 1926	Sept. 7, 1926	Oct. 6, 1925
Carwheels, Chicago	\$14.50	\$15.25	\$15.25	\$17.00
Carwheels, Philadelphia...	17.50	17.50	17.50	18.50
Heavy melting steel, P'gh	17.00	17.50	18.50	18.00
Heavy melting steel, Phila.	16.50	16.50	17.00	16.50
Heavy melting steel, Ch'go	13.00	13.50	14.25	16.00
Heavy melting steel, Ch'go	16.00	16.25	17.00	17.00
No. 1 cast, Pittsburgh....	17.50	17.50	18.50	18.00
No. 1 cast, Philadelphia...	17.50	17.50	17.00	17.50
No. 1 cast, Ch'go (net ton)	16.50	16.50	17.00	17.50
No. 1 RR. wrot., Phila....	17.00	17.50	18.00	18.00
No. 1 RR. wrot. Ch'go (net)	13.00	13.50	13.50	14.00

Coke, Connellsville, Per Net Ton at Oven:	Oct. 5, 1926	Sept. 28, 1926	Sept. 7, 1926	Oct. 6, 1925
Furnace coke, prompt....	\$3.50	\$3.50	\$3.25	\$3.50
Foundry coke, prompt....	4.50	4.50	4.25	4.25

Metals,	Oct. 5, 1926	Sept. 28, 1926	Sept. 7, 1926	Oct. 6, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	14.37½	14.50	14.50	14.50
Electrolytic copper, refinery	14.00	14.00	14.12½	14.12½
Zinc, St. Louis.....	7.35	7.35	7.40	8.05
Zinc, New York.....	7.70	7.70	7.75	8.40
Lead, St. Louis.....	8.35	8.40	8.65	9.25
Lead, New York.....	8.65	8.75	8.90	9.60
Tin (Straits), New York...	71.50	71.00	67.25	60.62½
Antimony (Asiatic), N. Y.	13.62½	14.25	16.25	17.25

Pittsburgh

Signs of Diminishing Demand for Finished Steel—Pig Iron Advances

PITTSBURGH, Oct. 5.—This week provides the first evidence of a turn in a situation which necessitated an 85 per cent engagement of steel-making capacity for the first nine months of the year. While there has been no noticeable decrease in ingot output in this and nearby districts, there has been a slowing down of some classes of finishing capacity, notably of the mills rolling steel for the automobile industry.

There is reasonably high operation of bar and shape mills, which seems to be due chiefly to belated releases against third quarter tonnages, rather than to strictly new business, which is checked to a considerable extent by a difference of ideas as to prices between producers and consumers. While makers of the common finishes of sheets have done a good business in the past two months and have order books sufficient to maintain a producing rate of about 90 per cent of capacity until close to the end of the year, those making automobile body sheets are faring poorly, because, with the exception of the General Motors Corporation, there is a general tendency in the direction of a reduced output of automobiles. The situation in this industry also is seen in tapering demands for other automobile steels.

Steel fabricating companies now report a dull market after a period of six weeks of dwindling demand. The demand for oil well pipe does not seem to diminish much, but with structural business on the down grade and the automobile industry paring its requirements,

the steel industry plainly is in need of demands from other directions to avoid a lower rate of steel production.

As to prices, makers of plates, shapes and bars are holding to the quotations they established about the beginning of the third quarter of the year, but the market is being subjected to a severe test in that fourth quarter contracts have been fewer and smaller than for the two preceding quarters. Sheet makers regard the last advance in prices as definitely established, and the quotable market probably is really up to these levels. It is doubtful, however, if any considerable amount of business on makers' books is priced that high, and order books indicate a rather extended coverage at former prices. The market in cold-finished steel bars, strips and bolts, nuts and rivets is better described as steady rather than firm.

There has been a further stiffening in prices of pig iron in this district, with all grades 50c. a ton higher, not so much because of a large demand, but due, rather, to the fact that output has been reduced and the coke market continues to show strength that is likely to mean higher producing costs. The continued softening of scrap prices is regarded as of more significance than the usual reaction that follows a period of buying when consumers become well covered and dealers are short of the market. It probably reflects the expectation of lower steel works operations between now and the end of the year and a consequent decrease in the requirements of old material.

Pig Iron.—Pig iron prices continue to gain strength. Demands of size are lacking, but with coke still advancing under the influence of a strong coal market produced by a sustained export demand coupled with

the usual seasonal increase in domestic requirements, blast furnace interests feel impelled to safeguard themselves against possible increases in producing costs. All makers of merchant iron are now quoting \$18 for basic iron, \$19 for Bessemer and \$18.50 for No. 2 foundry and malleable iron at Valley furnaces. The advance also includes low phosphorus iron, which is held as high as \$28, Valley furnace. Stocks of this grade available for market are very limited, and there are a number of tonnages before makers which they cannot accept because the iron is not now available. W. P. Snyder & Co. make the average price of Bessemer iron from Valley furnaces in September \$18.35, as against \$18.11 in August, and of basic \$17.50, compared with \$17.42 the month before.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$18.00
Bessemer	19.00
Gray forge	19.00
No. 2 foundry	18.50
No. 3 foundry	18.00
Malleable	18.50
Low phosphorus, copper free	\$27.50 to 28.00

Ferroalloys.—Large users of ferromanganese, spiegeleisen and high grade ferrosilicon are drawing against contracts which run to the end of the year, and such new business as there is comes from small-lot buyers. There is a quotation of \$95, Atlantic seaboard, for domestic ferromanganese, while British material nominally is quoted at \$100, but evidence is lacking that even small buyers are obliged to pay more than \$90 for domestic material. Carload lots of 16 to 19 per cent spiegeleisen have been sold at \$33, furnace, and \$87.50, delivered, is the ruling price on spot sales of 50 per cent ferrosilicon. There is still a scarcity of high grade spiegeleisen.

Semi-Finished Steel.—Although formal fourth quarter contracts for billets, slabs and sheet bars were fewer than for the second or third quarters, there is a good movement of sheet bars to the non-integrated sheet makers and a steady movement of billets and slabs to strip makers, with no suggestions of a change in prices. There is no longer an open market in these or other forms of semi-finished steel. Steel companies that do not make their own steel seem to have arrangements with those that do, which enable them to get supplies on a monthly instead of a quarterly basis without the formality of written contracts. Another change from the old order is that comparatively little tonnage now moves through middle men. There seems to be ample productive capacity for making billets, slabs, sheet bars, etc., and with buying measured by real requirements, speculative purchases have ceased and with them the artificial shortages that formerly occasioned open market activity. Prices are given on page 1021.

Steel and Iron Bars.—Steel bars still are firm at 2c. per lb., base Pittsburgh, for large tonnages and 2.10c. for the small lots, but business is not heavy at these levels. Releases against unspecified third quarter tonnages carrying prices \$2 a ton lower, were rather large

late last month and have protected buyers against a considerable part of their October requirements. It is still possible for buyers to place medium-sized lots at 2c., and those with larger tonnages to place seem to be holding off for the preferential price they usually have had. There are three classes of buyers: those that buy a carload from time to time, those that will take 400 or 500 tons in a quarter and those whose requirements for a year run to five and six figures. It is difficult to convince the latter, which include cold-finished steel bar makers, that they should pay the same price as those taking smaller tonnages, especially as the secondary market is not strong enough to stand an advance. There is no evidence that new business, even from large-lot buyers, is being entered at less than 2c., and there are small-lot sales at 2.10c. Iron bars are not moving with much snap, but prices are fairly steady.

Structural Steel.—The market in large shapes presents the same situation as obtains in steel bars, with the mills holding to a minimum of 2c., base Pittsburgh, and asking 2.10c. for small lots. As these prices represent an advance of \$2 a ton over those on third quarter business, buyers are disposed to test the market very thoroughly before committing themselves. It is said that price competition on fabricated steel is sharp.

Plates.—There does not seem to be much effort to get more than 1.90c., base Pittsburgh, but mills here are naming that price whether the tonnage offered is large or small. Mill engagement is fairly steady on plates for large pipe and river barges, but little car business is coming to this district. The car building plants are running at a very low rate, and operations of foundries making railroad castings do not average more than 40 per cent.

Wire Products.—Continued steady demand is noted for the ordinary products, with a fair sprinkling of orders for woven wire fence. General demand is sufficient to absorb the output of about 60 per cent of the country's capacity, and that is an approximate estimate of today's operations. This largely explains steady prices.

Rails and Track Supplies.—Enlargement of operations in the soft coal districts on account of the continued export demand and the fact that there is the usual seasonal expansion in domestic demand, is reflected in a stronger demand for small spikes and an increase in the orders for light-section rails. The latter, rolled from billets, now appear well established at \$36 per gross ton, although a good many of the current shipments carry lower prices. Outside of the recent Pennsylvania Railroad order for standard-section rails, 1927 business so far as the local mill is concerned, has not yet amounted to much. Prices are given on page 1019.

Tubular Goods.—No material decrease is yet observed in the demand for lap-welded pipe, and mills can look further ahead on mill schedules than can the makers of any other finished product with the single exception of sheets. There will be some decline in demand with the approach of cold weather, but with a

THE IRON AGE Composite Prices

Finished Steel Oct. 5, 1926, 2.439c. Per Lb.

One week ago	2.439c.
One month ago	2.439c.
One year ago	2.403c.
10-year pre-war average	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

	High		Low	
1926	2.453c.,	Jan. 5:	2.403c.,	May 18
1925	2.560c.,	Jan. 6:	2.396c.,	Aug. 18
1924	2.789c.,	Jan. 15:	2.460c.,	Oct. 14
1923	2.824c.,	April 24:	2.446c.,	Jan. 2

Pig Iron Oct. 5, 1926, \$19.63 Per Gross Ton

One week ago	\$19.46
One month ago	19.46
One year ago	19.79
10-year pre-war average	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low	
1926	\$21.54,	Jan. 5:	\$19.46,	July 13
1925	22.50,	Jan. 13:	18.96,	July 7
1924	22.88,	Feb. 26:	19.21,	Nov. 3
1923	30.86,	March 20:	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
F.o.b. Chicago.....	2.10c. to 2.20c.
F.o.b. Philadelphia.....	2.32c.
Del'd New York.....	2.34c.
Del'd Cleveland.....	2.19c.
F.o.b. Birmingham.....	2.15c. to 2.25c.
C.i.f. Pacific ports.....	2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
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Rail Steel

F.o.b. mill.....	1.80c. to 1.90c.
F.o.b. Chicago.....	2.00c.

Iron

Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	3.00c.
Common iron, del'd Philadelphia.....	2.22c.
Common iron, del'd New York.....	2.24c.

Tank Plates

Base Per Lb.

F.o.b. Pittsburgh mill.....	1.90c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	2.05c. to 2.15c.
Del'd Cleveland.....	2.09c.
Del'd Philadelphia.....	2.22c.
Del'd New York.....	2.24c.
C.i.f. Pacific ports.....	2.30c.

Structural Shapes

Base Per Lb.

F.o.b. Pittsburgh mill.....	2.00c. to 2.10c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	2.15c. to 2.25c.
Del'd Cleveland.....	2.19c.
Del'd Philadelphia.....	2.32c.
Del'd New York.....	2.34c.
C.i.f. Pacific ports.....	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

Base Per Lb.

All gages, narrower than 6 in., P'gh.....	2.50c.
All gages, 6 in. and wider, P'gh.....	2.30c.
All gages, 6 in. and narrower, Chicago.....	2.60c.
All gages, wider than 6 in., Chicago.....	2.50c.
Cotton ties, f.o.b. Atlantic ports, per bundle of 45 lb.....	\$1.22
Cotton ties, f.o.b. Gulf ports, per bundle of 45 lb.....	1.20

Cold-Finished Steel

Base Per Lb.

Bars, f.o.b. Pittsburgh mills.....	2.30c. to 2.50c.
Bars, f.o.b. Chicago.....	2.40c. to 2.50c.
Bars, Cleveland.....	2.45c. to 2.55c.
Shafting, ground, f.o.b. mill.....	\$2.70c. to \$3.00c.
Strips, f.o.b. Pittsburgh mills.....	3.25c. to 3.60c.
Strips, f.o.b. Cleveland mills.....	3.25c. to 3.50c.
Strips, delivered Chicago.....	3.80c.
Strips, f.o.b. Worcester mills.....	3.75c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

Base per Keg

Wire nails.....	\$2.65
Galv'd nails, 1-in. and longer.....	4.65
Galv'd nails, shorter than 1-in.....	4.90
Galvanized staples.....	3.35
Polished staples.....	3.10
*Cement coated nails.....	2.65

*Subject to new card of extras dated Sept. 1, 1926.

Base Per 100 Lb.

Bright plain wire, No. 9 gage.....	\$2.50
Annealed fence wire.....	2.65
Spring wire.....	5.60
Galv'd wire, No. 9.....	3.10
Barbed wire, galv'd.....	3.85
Barbed wire, painted.....	3.10

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$3 a ton higher; Anderson, Ind., \$1 higher.

Woven Wire Fence

Base to Retailers Per Net Ton

F.o.b. Pittsburgh.....	\$65.00
F.o.b. Cleveland.....	65.00
F.o.b. Anderson, Ind.....	66.00
F.o.b. Chicago district mills.....	67.00
F.o.b. Duluth.....	68.00
F.o.b. Birmingham.....	68.00

Sheets

Blue Annealed

Base Per Lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....	2.30c. to 2.40c.
Nos. 9 and 10, f.o.b. Ch'go dist. mill.....	2.40c. to 2.50c.
Nos. 9 and 10, del'd Philadelphia.....	2.62c. to 2.72c.
Nos. 9 and 10, f.o.b. Birmingham.....	2.60c. to 2.70c.

Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh.....	3.00c. to 3.10c.
No. 24, f.o.b. Ch'go dist. mill.....	3.10c. to 3.20c.
No. 24, del'd Philadelphia.....	3.32c. to 3.42c.
No. 24, f.o.b. Birmingham.....	3.30c. to 3.40c.

Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade.....	4.25c.
No. 24, f.o.b. Pittsburgh, B grade.....	4.10c.

Galvanized

No. 24, f.o.b. Pittsburgh.....	3.85c. to 3.95c.
No. 24, f.o.b. Chicago dist. mill.....	3.95c. to 4.05c.
No. 24, del'd Philadelphia.....	4.17c. to 4.32c.
No. 24, f.o.b. Birmingham.....	4.15c. to 4.25c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	3.15c. to 3.25c.
No. 28, f.o.b. Chicago dist. mill.....	3.25c. to 3.35c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....	4.25c.
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Long Ternes

No. 28, 8-lb. coating, f.o.b. mill.....	4.65c.
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Tin Plate

Per Base Box

Standard cokes, f.o.b. P'gh district mills.....	\$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.....	5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base.....	\$11.40
8-lb. coating I.C. 11.70.....	
15-lb. coating I.C. 14.85.....	
20-lb. coating I.C. \$16.20.....	
25-lb. coating I.C. 17.90.....	
30-lb. coating I.C. 19.45.....	
40-lb. coating I.C. 21.65.....	

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers

Base Per 100 Lb.

2100* (½% Nickel, 0.10% to 0.20% Carbon).....	\$3.20 to \$3.25
2300 (3½% Nickel).....	4.40 to 4.50
2500 (5% Nickel).....	5.50 to 5.65
3100 (Nickel Chromium).....	3.40 to 3.50
3200 (Nickel Chromium).....	5.00 to 5.25
3300 (Nickel Chromium).....	7.00 to 7.25
3400 (Nickel Chromium).....	6.25 to 6.50
5100 (Chromium Steel).....	3.40 to 3.50
5200* (Chromium Steel).....	7.00 to 7.50
6100 (Chrom. Vanadium bars).....	4.30
6100 (Chrom. Vanad. spring steel).....	3.80
9250 (Silicon Manganese spring steel).....	3.20 to 3.25
Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.).....	4.10 to 4.20
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.).....	4.30
Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.).....	4.25 to 4.35
Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.).....	3.40 to 3.50
Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum).....	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

Per Gross Ton

Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	36.00
Light (from rail steel), f.o.b. mill.....	32.00 to 34.00
Light (from billets), f.o.b. Ch'go mill.....	36.00 to 38.00

Track Equipment

(F.o.b. Mill)

Base Per 100 Lb.

Spikes, ½ in. and larger.....	\$2.80 to \$3.00
Spikes, ½ in. and smaller.....	2.90 to 3.25
Spikes, boat and barge.....	3.25
Track bolts, all sizes.....	3.90 to 4.50
Tie plates, steel.....	2.25 to 2.35
Angle bars.....	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Inches	Steel	Black Galv.	Inches	Steel	Black Galv.
1½.....	45	19½	1½ to 2.....	22	2
2.....	51	25½	2½.....	28	11
2½.....	56	42½	3 to 4.....	30	12
3.....	60	48½			
3½.....	62	50½			

Lap Weld

2.....	55	43½	2.....	23	7
2½ to 6.....	59	47½	2½.....	26	11
7 and 8.....	56	43½	3 to 6.....	28	13
9 and 10.....	54	41½	7 to 12.....	26	11
11 and 12.....	53	40½			

Butt Weld, extra strong, plain ends

1½.....	41	24½	1½ to 2.....	+19	+54
2.....	47	30½	2½.....	21	7
2½.....	53	42½	3.....	28	12
3.....	58	47½	1 to 1½.....	30	14
3½.....	60	49½			
4 to 8.....	61	50½			

Lap Weld, extra strong, plain ends

2.....	53	42½	2.....	23	9
2½ to 4.....	57	46½	2½ to 4.....	29	15
4½ to 6.....	56	45½	4½ to 6.....	28	14
7 to 8.....	52	39½	7 to 8.....	21	7
9 and 10.....	45	32½	9 to 12.....	16	2
11 and 12.....	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel	Charcoal Iron
2 to 2½ in.....	27
2½ to 3 in.....	37
3 in.....	40
3½ to 4 in.....	42½
4 to 13 in.....	46
	1½ in.....
	1¾ to 1½ in.....
	2 to 2½ in.....
	2½ to 3 in.....
	3½ to 4½ in.....

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.....	60	3 in.....	45
1½ to 1¾ in.....	52	3½ to 3¾ in.....	47
1¾ in.....	36	4 in.....	50
2 to 2½ in.....	31	4½, 5 and 6 in.....	45
2½ to 3 in.....	39		

Hot Rolled

2 and 2½ in.....	34	3½ and 3¾ in.....	50
2½ and 2¾ in.....	42	4 in.....	53
3 in.....	48	4½, 5 and 6 in.....	48

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Per Cent Off List

Carbon, 0.10% to 0.30%, base.....	55
Carbon, 0.30% to 0.40%, base.....	50
Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.	

good order book in line pipe and the need of building up mill stocks, it is likely there will be a high rate of operation of lap-welded pipe capacity throughout the winter. Standard-weight pipe sells steadily, but prompt shipments are being made by all makers. Boiler tubes are moving fairly steadily, and mechanical tubing reflects in demand the sustained operations of the motor car industry. Discounts are given on page 1019.

Sheets.—Mills in this district now regard the market as established at 3.10c., base Pittsburgh, for black, 3.95c., base, for galvanized and 2.40c., base, for blue annealed sheets. These are the prices that makers representing a very large percentage of the country's capacity are quoting and holding to, but actual sales at these bases are few and small, because such a large percentage of consumers had ample time to get orders in before they became effective. Bookings of the mills are reported to be equal to two and one-half months' production at a 90 per cent engagement of capacity. It seems likely that this month will be a good one in specifications and shipments, but hardly in sales, because of the extensive coverage that consumers now have. Production is rising, with the present average over 90 per cent of theoretical capacity. September sales and shipments were well ahead of those of August. The sheet and tin plate shipments of the American Sheet & Tin Plate Co. last month were 20,000 tons larger than those of the month before. Prices are given on page 1019.

Tin Plate.—The leading maker still has an operation of 92 per cent of capacity, but the ending of the packer can demands has made it necessary for some of the independent companies to advance later shipment orders to maintain their recent operating schedules. A lighter general operation of the mills appears just ahead.

Cold-Finished Steel Bars and Shafting.—On the great bulk of business in the ordinary tonnage class, 2.50c., base Pittsburgh, is the ruling price, but there is usually some deviation and the present is no exception to the rule. General demand is steady enough, but individual orders are small and represent the immediate requirements of buyers. It is difficult for makers to build up order books, and naturally there is more than the usual amount of interest in orders of more than ordinary size.

Bolts, Nuts and Rivets.—Lighter demands for bolts and nuts are accompanied by more anxiety on the part of makers for business and some irregularity in prices. The carload discounts have been named on less-than-carload lots to buyers whose requirements over a year usually reach attractive proportions. Large rivets are going as low as \$2.45, base, per 100 lb. on round lots running to a few sizes, but on small lots most makers are holding to \$2.60. Small rivets are more commonly quoted at 70, 10 and 5 per cent off list.

Hot-Rolled Flats.—In strips, incoming business is beginning to fall behind shipments, because most of the automobile builders are reducing their production schedules. Last month's orders, however, are of sufficient volume to provide a fairly good engagement of mills for this month. Recent prices are holding.

Cold-Rolled Strips.—New business from the Detroit district is on a lighter scale, but there is a fairly well sustained demand from other consuming industries. On small lots the market is still quotable at 3.50c. to 3.60c., base Pittsburgh, but the large tonnage market is at least \$5 a ton below that range.

Coke and Coal.—The coal market has been showing real strength in the past week under the combined influence of export demand due to the British coal strike and the normal gain in demand for home consumption. Coal mines are enlarging output, and with some union mines resuming and paying the full union wage rate, men are being drawn away from the Connellsville district. It is not possible to increase coke production, nor is there much tendency in that direction, since the raw coal is more profitable than coke. These are the circumstances surrounding a further stiffening of the Connellsville coke market, with sales of spot furnace grade at as high as \$3.75 per net ton at ovens and none of standard grade available at less than \$3.50. Coal prices are 25c. to 50c. a ton higher than a month ago, and much of this advance has been in the past week or 10 days.

Old Material.—The market continues to weaken and is 50c. per ton lower on practically all grades. Melters are not interested in additional supplies, while dealers, sensing a possible let-down in steel works operations during the remainder of the year, are trying to dispose of stocks built up in anticipation of a strong and active market with the approach of winter. On heavy melting steel the ruling price is \$17, at which one lot of 1000 tons was sold to a Pittsburgh district steel maker. Dealers are asking \$17.50 for this grade and are hopeful of getting it at some points in the district, but with shipments held up by two consumers while others are well covered, and with dealers with short orders to cover showing only passive interest, it is difficult to make sales at that price. A change of practice by an Ohio steel company, substituting heavy for light scrap, has released some large tonnages of turnings. The Pennsylvania Railroad scrap list for October, which closes Oct. 6, totals more than 40,000 net tons.

We quote for delivery to consumers' yards in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel.....	\$17.00 to \$17.50
Scrap rails	16.25 to 16.75
No. 1 cast, cupola size.....	16.00 to 16.50
Compressed sheet steel.....	15.50 to 16.00
Bundled sheets, sides and ends..	14.50 to 15.00
Railroad knuckles and couplers..	18.50 to 19.00
Railroad coil and leaf springs...	18.50 to 19.00
Low phosphorus blooms and bil-	
let ends	21.50 to 22.00
Low phosphorus mill plates....	21.00 to 21.50
Low phosphorus, light grade....	17.50 to 18.00
Low phosphorus punchings....	18.50 to 19.00
Steel car axles.....	21.50 to 22.00
Cast iron wheels.....	16.00 to 16.50
Rolled steel wheels.....	18.50 to 19.00
Machine shop turnings.....	12.25 to 12.75
Short shoveling steel turnings...	13.50 to 14.00
Sheet bar crops.....	17.50 to 18.00
Heavy steel axle turnings.....	15.00 to 15.50
Short mixed borings and turnings	12.25 to 12.75
Heavy breakable cast.....	15.50 to 16.00
Cast iron borings.....	12.25 to 12.75
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought.....	17.00 to 17.50
Railroad or automobile malleable	
scrap	17.50 to 18.00

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Tank plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes.....	2.90c.
Reinforcing steel bars	2.90c.
Black sheets (No. 24 gage), 25 or more	
bundles	3.95c.
Galvanized sheets (No. 24 gage), 25 or	
more bundles	4.70c.
Blue annealed sheets (No. 10 gage), 25 or	
more sheets	3.40c.
Cold-finished shafting and screw stock—	
Rounds and hexagons.....	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Spikes, large	3.30c.
Small	3.50c. to 5.25c.
Boat	3.80c.
Bolts, track	4.90c.
Wire, black soft annealed, base per 100 lb.	\$3.00
Wire, galvanized soft, base per 100 lb....	3.00
Common wire nails, per keg.....	3.00
Cement coated nails	3.05

Steady improvement in the financial position of the Liberty Steel Co., Warren, Ohio, the common stock of which is owned by the Trumbull Steel Co., also of Warren, is reported by President John T. Harrington of the Liberty company. The indebtedness incurred some time ago by a financial crisis in the company has been reduced from \$300,000 to \$120,000, and is expected to be completely wiped out before the end of the year.

The Central Alloy Steel Corporation, Massillon, Ohio, recently formed by a merger of the United Alloy Steel Corporation, Canton, Ohio, and the Central Steel Co. and Central Furnace Co., Massillon, reports net profits of \$2,642,921 for the six months ended June 30, equivalent after preferred dividends to \$1.75 on common stock.

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms	Per Gross Ton
Re-rolling, 4-in. and over.....	\$35.00
Re-rolling, under 4-in. to and including 1 1/2-in.....	36.00
Forging, ordinary.....	40.00
Forging, guaranteed.....	45.00

Sheet Bars	Per Gross Ton
Open-hearth or Bessemer.....	\$36.00

Slabs	Per Gross Ton
8 in. x 2 in. and larger.....	\$35.00
Smaller than 8 in. x 2 in.....	36.00

Skelp	Per Lb.
Grooved.....	1.90c.
Sheared.....	1.90c.
Universal.....	1.90c.

Wire Rods	Per Gross Ton
*Common soft, base.....	\$45.00
Screw stock.....	\$5.00 per ton over base
Carbon 0.20% to 0.40%.....	3.00 per ton over base
Carbon 0.41% to 0.55%.....	5.00 per ton over base
Carbon 0.56% to 0.75%.....	7.50 per ton over base
Carbon over 0.75%.....	10.00 per ton over base
Acid.....	15.00 per ton over base

*Chicago mill base is \$46. Cleveland mill base, \$45.

Prices of Raw Materials

Ores	Per Gross Ton
Lake Superior Ores, Delivered Lower Lake Ports	
Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesabi Bessemer, 51.50% iron.....	4.40
Mesabi non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15
Foreign Ore, c.i.f. Philadelphia or Baltimore	
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian.....	9.50c. to 10c.
Iron ore, Swedish, average 66% iron.....	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus.....	40c. to 42c.
Manganese ore, high grade, nominal.....	35c. to 44c.
Tungsten ore, high grade, per unit, in 60% concentrates.....	\$11.75 to \$12.50
Chrome ore, Indian basic, 48% Cr ₂ O ₃ , crude, c.i.f. Atlantic seaboard.....	\$22.50
Molybdenum ore, 85% concentrates of MoS ₂ , delivered.....	50c. to 55c.

Coke	Per Net Ton
Furnace, f.o.b. Connellsville prompt.....	\$3.50 to \$3.75
Foundry, f.o.b. Connellsville prompt.....	4.50 to 5.00
Foundry, by-product, Ch'go ovens.....	9.75
Foundry, by-product, New England, del'd.....	12.00
Foundry, by-product, Newark or Jersey City, delivered.....	9.50 to 10.77
Foundry, Birmingham.....	5.50 to 6.00
Foundry, by-product, St. Louis or Granite City.....	10.00

Coal	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines.....	\$2.00 to \$2.15
Mine run coking coal, f.o.b. W. Pa. mines.....	2.00 to 2.25
Mine run gas coal, f.o.b. Pa. mines.....	2.40 to 2.50
Steam slack, f.o.b. W. Pa. mines.....	1.30 to 1.35
Gas slack, f.o.b. W. Pa. mines.....	1.50 to 1.60

Ferromanganese	Per Gross Ton
Domestic, 80%, furnace or seab'd.....	\$35.00 to \$35.00
Foreign, 80%, Atlantic or Gulf port, duty paid.....	38.00

Spiegeleisen	Per Gross Ton Furnace
Domestic, 19 to 21%.....	\$32.00 to \$34.00
Domestic, 16 to 19%.....	31.00 to 33.00

Electric Ferrosilicon	Per Gross Ton Delivered
50%.....	\$35.00 to \$37.50
75%.....	145.00 to 150.00
Per Gross Ton Furnace	Per Gross Ton Furnace
10%.....	\$35.00
11%.....	37.00
12%.....	\$39.00
14 to 16%.....	\$45 to 46.00

Bessemer Ferrosilicon	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace	
10%.....	\$35.00
11%.....	36.00
12%.....	\$37.00

Silvery Iron	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace	
6%.....	\$25.50
7%.....	26.50
8%.....	27.50
9%.....	29.00
10%.....	\$31.00
11%.....	33.00
12%.....	35.00

Other Ferroalloys	Per Gross Ton
Ferrotungsten, per lb. contained metal, del'd.....	\$1.05 to \$1.10
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads.....	11.50c.
Ferrovandium, per lb. contained vanadium, f.o.b. furnace.....	\$3.25 to \$4.00
Ferrocobalt, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton.....	\$91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton.....	\$122.50

Fluxes and Refractories	Per Net Ton
Fluorspar	
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines.....	\$17.00 to \$18.00
No. 2 lump, Illinois and Kentucky mines.....	\$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid.....	\$17.00 to \$17.50
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/4% silica, f.o.b. Illinois and Kentucky mines.....	\$32.50

Fire Clay	Per 1000 f.o.b. Works
High Duty	
Pennsylvania.....	\$40.00 to \$43.00
Maryland.....	43.00 to 46.00
New Jersey.....	55.00 to 75.00
Ohio.....	40.00 to 43.00
Kentucky.....	40.00 to 43.00
Illinois.....	40.00 to 43.00
Missouri.....	40.00 to 43.00
Ground fire clay, per ton.....	6.50 to 7.50

Silica Brick	Per 1000 f.o.b. Works
Pennsylvania.....	\$43.00
Chicago.....	52.00
Birmingham.....	50.00
Silica clay, per ton.....	\$8.00 to 9.00

Magnesite Brick	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.....	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.....	40.00

Chrome Brick	Per Net Ton
Standard size.....	\$45.00 to \$50.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts	Per Cent Off List
(Less-than-Carload Lots)	
(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)	
Machine bolts, small, rolled threads.....	60 and 10
Machine bolts, all sizes, cut threads.....	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads.....	50, 10 and 10
Carriage bolts, cut threads, all sizes.....	60 and 10
Eagle carriage bolts.....	65 and 10
Lag bolts.....	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads.....	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, 1/2 x 4 in.....	45, 10 and 5
Larger and longer sizes.....	45, 10 and 5
Bolt ends with hot-pressed nuts.....	50, 10 and 10
Bolt ends with cold-pressed nuts.....	45, 10 and 5
Hot-pressed nuts, blank and tapped, square, 4.00c. per lb. off list	
Hot-pressed nuts, blank or tapped, hexagons, 4.40c. per lb. off list	
C.p.c. and t. square or hex. nuts, blank or tapped.....	4.10c. per lb. off list
Washers.....	6.75c. to 6.50c. per lb. off list

*F.o.b. Chicago and Pittsburgh.
The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-pressed nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts	Per Cent Off List
(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)	
Semi-finished hexagon nuts:	
1/2 in. and smaller, U. S. S.....	30, 10 and 5
3/4 in. and larger, U. S. S.....	75, 10 and 5
Small sizes, S. A. E.....	80, 10, 10 and 5
S. A. E., 1/2 in. and larger.....	75, 10, 10 and 5
Stove bolts in packages.....	80, 10, 5 and 2 1/2
Stove bolts in bulk.....	80, 10, 5 and 2 1/2
Tire bolts.....	60 and 5

Semi-Finished Castellated and Slotted Nuts	Per 100 Net S.A.E. U.S.S.
(Actual freight allowed up to but not exceeding 50c. per 100 lb.)	
(To jobbers and consumers in large quantities)	
1/2-in.....	\$0.44 \$0.44
3/4-in.....	0.515 0.515
1-in.....	0.62 0.66
1 1/4-in.....	0.79 0.90
1 1/2-in.....	1.01 1.05
1 3/4-in.....	1.33 1.42
2-in.....	1.70 1.71
1 1/2-in.....	\$2.35 \$2.40
1-in.....	3.60 3.60
1-in.....	5.65 5.80
1 1/4-in.....	8.90 8.90
1 1/2-in.....	12.60 13.10
1 3/4-in.....	18.35 18.35
2-in.....	21.00 21.00

Larger sizes.—Prices on application.

Large Rivets	Base Per 100 Lb.
F.o.b. Pittsburgh.....	\$2.45 to \$2.60
F.o.b. Cleveland.....	2.70
F.o.b. Chicago.....	2.60 to 2.75

Small Rivets	Per Cent Off List
F.o.b. Pittsburgh.....	70, 10 and 5 to 70 and 10
F.o.b. Cleveland.....	70, 10 and 5 to 70 and 10
F.o.b. Chicago.....	70, 10 and 5 to 70 and 10

Cap and Set Screws	Per Cent Off List
(Freight allowed up to but not exceeding 50c. per 100 lb.)	
Milled cap screws.....	80 and 10
Milled standard set screws, case hardened.....	80 and 10
Milled headless set screws, cut thread.....	80
Upset hex. head cap screws, U. S. S. thread.....	80, 10 and 10
Upset hex. cap screws, S.A.E. thread.....	80, 10 and 10
Upset set screws.....	80, 10 and 5
Milled studs.....	70 and 5

Chicago

Crop Damage Affects Wire and Implement Business—Charcoal Down \$2

CHICAGO, Oct. 5.—Chicago district blast furnace operations have been increased by the blowing in of a Wisconsin Steel Works stack. Active steel plant blast furnaces in this district now number 26 out of a total of 36.

On the whole, the steel market is steady, with mill operations holding at close to the average of a week ago. There has been little or no hesitancy in placing fourth quarter contracts, and as a result sales of finished steel for September were 20 per cent above those of August. Labor troubles and the approach of the winter months are slowing up building programs, but fabricators with slightly better than six weeks' bookings, are still sending good specifications to mills. Rail transactions are in good volume, and outstanding inquiry is heavy. Rail mill operations, however, have not yet been speeded up, and producers do not anticipate such a move for several weeks. One maker is operating alternate weeks on rails and structural shapes. Tank makers are unusually busy on orders received from oil producers in the Southwest, and the trade estimates that 20,000 tons of additional tank business is in sight.

Pig Iron.—Charcoal iron has declined \$2 a ton and is now quoted at \$24, furnace, or \$27.04 delivered Chicago. This is the first change in price since November, 1923. Reports here indicate that this move may have been made in an effort to move stocks at the furnace, but dealers in this territory find that the announcement of the price cut has brought out very little business. The new quotation lacks strength. September was a good month in sales and shipments of Northern coke iron. It was slightly better than August and about equal to September of a year ago. The pace of last month is being carried into October, and there is every indication that the foundry melt is also being maintained. There appears to be no evidence that users are accumulating stocks, and the iron on the ground at furnaces is gradually diminishing. A gray iron foundry in the Chicago district is in the market for 1000 tons for delivery during the remainder of the year, and two users in central Illinois are inquiring for a total of 800 tons. A number of users who ordinarily contract by the quarter have not covered for the next three months, and their failure to do so is ascribed to the narrow margin of change in pig iron prices during the past year. The variation since September, 1925, has been only \$2 per ton. The second and final shipment of pig iron by water has arrived here from Cleveland, and it is said that no further Lake shipments are being considered.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	\$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50
Malleable, not over 2.25 sil.	21.00
High phosphorus	21.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	26.01
Southern No. 2 (barge and rail) ..	24.18
Low phos., sil. 1 to 2 per cent, copper free	\$29.50 to 30.00
Silvery, sil. 8 per cent	32.29
Bessemer ferrosilicon, 14 to 15 per cent	45.79

Ferroalloys.—A few scattered carlot sales of ferromanganese are reported at \$95, seaboard, for delivery during the fourth quarter. One small order for delivery in December is said to have brought \$100, seaboard. This commodity cannot now be had at \$88 except in small lots and for immediate delivery. A few cars of domestic spiegeleisen are coming into this market, and

the 19 to 21 per cent grade is bringing \$34, Hazzard, Pa., or \$41.76 delivered Chicago.

We quote 80 per cent ferromanganese, \$95.56 to \$102.56, delivered Chicago; 50 per cent ferrosilicon, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$41.76, delivered Chicago.

Sheets.—Sheet prices are steady, and the recent advance of \$2 a ton is holding. Producers are well booked to the end of the year, and deliveries, although depending upon mill schedules, range from six to eight weeks. Demand from the roofing trade is unusually good, and a fair tonnage of galvanized sheets is being taken by makers of light tanks. Specifications from warehouses are liberal.

Chicago delivered prices from mill are 3.15c. to 3.25c. for No. 24 black; 2.45c. to 2.55c. for No. 10 blue annealed; 4c. to 4.10c. for No. 24 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Plates.—Oil producing regions of the country continue to be a good source of business for plate mills. New bookings this week are in excess of 9000 tons, and there still remains not less than 20,000 tons on inquiry. Both producers of steel and car builders are more optimistic regarding the outlook in the railroad equipment market. Counting the inquiries from the Missouri Pacific, the Chicago & North Western and the Chicago, Milwaukee & St. Paul there are now about 8000 cars pending in this district. Three other railroads entering Chicago are expected to ask for prices in the near future on 15,000 cars. Deliveries on plates are tending to extend, this being particularly true of the universal mill product.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

Bolts, Nuts and Rivets.—Fourth quarter contracts are fully up to expectations of makers, both in volume and number, and prices are steady. Specifications are heavier, particularly from the railroads and farm implement and tractor makers.

Structural Material.—Specifications for plain material are reaching the mills at about the same rate as during September. A large tonnage of structural work is up for figures, but actual awards are light. Fabricators in this immediate territory regard the local labor situation as the main factor in delaying the placing of contracts. In accordance with agreements made earlier in the year the wages of approximately 40,000 workmen in the building trades were increased this week. The plumbers' union has succeeded in forcing an agreement for the strict observance of the closed shop and it is generally believed that similar settlements will soon be made with sheet metal workers and other crafts. The books of fabricators do not cover more than six weeks' work, on the average, and as a result competition is keen, and current bids are below the level which prevailed during the summer and early fall. Since their stocks are low and unbalanced, structural shops continue to press the mills for the best possible deliveries.

The mill quotation on plain material is 2.10c. per lb. base, Chicago.

Bars.—Sales of mild steel bars for September were 20 per cent larger than for August. This gain was due largely to the placing of fourth quarter contracts. Shipments for the month just closed were about equal to those of August, and current specifications are well in advance of shipments. The farm implement industry, which was getting well under way on its fall program, has suffered a setback as a result of damage to crops in the corn belt. Orders to hold shipments of agricultural machinery are numerous, and this is now being reflected in the reduced specifications to the mills. Orders from automobile parts makers are lighter this week, but mills believe this to be the result of an effort to reduce inventories rather than an indication of reduced demand from automobile builders, whose production schedules for October are reported to be equal to those of September. Makers of forged products are busy, and there is no recession in the rate of forging bar shipments. Alloy steel bar mills in this territory are operating practically at capacity and report no change in the rate of orders from the automobile in-

dustry. Demand for iron bars is steady, but relatively light. Mill order books are not large, and deliveries range from seven to 10 days. Railroads are the most consistent users of the product at this time. Iron bars are steady at 2c., Chicago. There has been a slight recession in the demands for rail steel bars, but two makers in this territory continue to operate double turn. Reinforcing bar business is lighter, but in view of the large tonnage pending in inquiries, is expected to improve. Floods throughout the Central West are blamed by the trade for a slackening in fence post business, and if crop damage is as extensive as reported, there is little hope for improvement in this branch of the trade. In rail steel bar shipments, September was ahead of August, as well as September of a year ago. Specifications for the first week in October exceed shipments by a small margin.

Mill prices per lb are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c., base, Chicago; rail steel bars, 2c., base, Chicago.

Cold-Finished Steel Bars.—Demand is steady, and fourth quarter contracts are well covered at 2.50c., Chicago. Large tonnages, however, are being booked at 2.40c., and less attractive business is going at 2.50c.

Cold-Rolled Strip.—This commodity lacks strength, and the bulk of current business is being taken at close to 3.50c., Cleveland, or 3.80c., delivered Chicago.

Wire Products.—September shipments of wire products were larger than those for August, but a trifle below those of the corresponding month a year ago. Business from manufacturing consumers is good and shows virtually no change from the preceding week. Mill stocks have not been increased, and makers are holding production close to users' requirements. The jobbing trade is less active than earlier in the fall. This is due, it is reported, to crop damage resulting from unseasonable weather. In the cotton-growing districts wet weather has cut down the yield. Agricultural conditions in the East are better than in the Central West, where excessive rain continues to fall. The jobbing trade has picked up slightly in the Northwest, but no material improvement in business from that direction is looked for until another growing season gets well under way. The demand for nails is steady and has shown little dropping off as a result of the approach of the winter months. Prices, which are steady, are shown on page 1019.

Rails and Track Supplies.—The rail and track supply market is active, and so far this fall Chicago makers have booked 100,000 tons, which represents the purchases of five railroads. Definite inquiries for rails and fastenings before Chicago mills total not less than 550,000 tons. In general, the fall rail buying movement is progressing at about the same rate as last year. A small tonnage of iron tie plates was placed this week by a Western street railway company.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, \$36 to \$38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. per lb. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.35c. mill; angle bars, 2.75c. mill.

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.10c.
Mild steel bars	3.00c.
Reinforcing bars, billet steel.....	2.25c. to 2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons	3.60c.
Flats and squares	4.10c.
Hoops	4.15c.
Bands	3.65c.
No. 24 black sheets	3.95c.
No. 10 blue annealed sheets	3.50c.
No. 24 galvanized sheets	4.80c.
Standard railroad spikes.....	3.55c.
Track bolts	4.55c.
Structural rivets	3.50c.
Boiler rivets	3.70c.
	Per Cent Off List
Machine bolts	50 and 5
Carriage bolts	47 1/2
Coach or lag screws	55 and 5
Hot-pressed nuts, square, tapped or blank,	
3.25c. off per lb.	
Hot-pressed nuts, hexagons, tapped or blank,	
3.75c. off per lb.	
No. 8 black annealed wire, per 100 lb.....	\$3.30
Common wire nails, base, per keg.....	3.05
Cement coated nails, base, per keg.....	3.05

Reinforcing Bars.—The outstanding inquiry this week is 3750 tons of billet bars for work to be undertaken at Stickney, Ill., by the Sanitary District, Chicago. Awards continue to drag. An extensive program of road widening is under way in Cook County, Ill., but it is doubtful if the bar tonnage required will be placed before early spring. The building program of the Chicago board of education is well advanced, and not much more tonnage can be expected from that source this year. The price situation shows little change. Very small tonnages of billet bars bring about 2.60c., Chicago warehouse, and attractive tonnages can still be bought at about 2.25c. Lettings and new inquiries are shown on page 1035.

Cast Iron Pipe.—There is a steady demand for cast iron pipe from practically all sources, and prices range from \$47.20 to \$49.20, delivered Chicago, for 6-in. and larger diameters. At Chicago the National Cast Iron Pipe Co. is low on 448 tons of Class C pipe, with a price of \$48, delivered, which figures back to \$39.80, base Birmingham. At Detroit the United States Cast Iron Pipe & Foundry Co. is low with a quotation of \$45.95, delivered, or \$38.03, base Birmingham. The United States company is low bidder at Milwaukee on 150 tons of 6-in., 100 tons of 8-in. and 75 tons of 16-in. Class C pipe, at \$47.40, delivered, or \$38.90, Birmingham. Other delivered bids ranged from \$48.50 to \$50.50. Deliveries on 6 and 8-in. pipe are three to four weeks and on 10 and 12-in. pipe five to six weeks.

We quote per net ton, delivered, Chicago, as follows: Water pipe, 4-in., \$51.20 to \$53.20; 6-in. and over, \$47.20 to \$49.20; Class A and gas pipe, \$4 extra.

Old Material.—The market is decidedly weak and prices, which are marked down this week, are expected by the trade to go still lower. Two consumers of heavy melting steel have taken 5000 tons at \$13.75 per gross ton, delivered, but dealers' offers to sell more at \$13.50 are being refused. In the meantime railroad shipments are heavy and prompt. Prices paid to the railroads are drawing closer to the prices paid by consumers. Early last week the Burlington got the equivalent of \$17.25 per gross ton, delivered, for railroad malleable, \$16.40 for miscellaneous rails, \$15.85 for steel angle bars and \$15 for cast iron carwheels. Borings are more difficult to place than any other grade, and users are refusing to consider offers at \$9.50. Inquiry from users has almost wholly disappeared from the market. A Pennsylvania Railroad list this week totals 39,000 tons and includes 6300 tons of heavy melting steel.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items, except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton	
Heavy melting steel.....	\$13.00 to \$13.50
Frogs, switches and guards, cut apart, and miscellaneous rails.	15.25 to 15.75
Shoveling steel	13.00 to 13.50
Hydraulic compressed sheets....	11.50 to 12.00
Drop forge flashings	9.00 to 9.50
Forged cast and rolled steel carwheels	17.00 to 17.50
Railroad tires, charging box size.	18.00 to 18.50
Railroad leaf springs, cut apart..	17.50 to 18.00
Steel couplers and knuckles.....	16.75 to 17.25
Coil springs	18.25 to 18.75
Low phosphorus punchings.....	16.50 to 17.00
Axle turnings, foundry grade....	13.25 to 13.75
Axle turnings, blast fur. grade..	9.50 to 10.00
Relaying rails, 56 to 60 lb.....	25.50 to 26.50
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Rerolling rails	17.00 to 17.50
Steel rails, less than 3 ft.....	17.00 to 17.50
Iron rails	14.50 to 15.00
Cast iron borings.....	9.00 to 9.50
Short shoveling turnings.....	9.00 to 9.50
Machine shop turnings.....	6.75 to 7.25
Railroad malleable	16.50 to 17.00
Agricultural malleable	15.00 to 15.50
Angle bars, steel.....	15.50 to 16.00
Cast iron carwheels.....	14.50 to 15.00

Per Net Ton	
No. 1 machinery cast	16.50 to 17.00
No. 1 railroad cast	15.75 to 16.25
No. 1 agricultural cast	15.50 to 16.00
Stove plate	14.00 to 14.50
Grate bars	14.00 to 14.50
Brake shoes	13.50 to 14.00
Iron angle and splice bars	14.00 to 14.50
Iron arch bars and transoms....	19.50 to 20.00
Iron car axles.....	22.50 to 23.00
Steel car axles	17.50 to 18.00
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought.....	12.00 to 12.50
No. 1 busheling	10.25 to 10.75
No. 2 busheling.....	6.75 to 7.25
Locomotive tires, smooth.....	16.50 to 17.00
Pipes and flues.....	9.50 to 10.00

Philadelphia

Pennsylvania Railroad Opens Rail Bids— Pig Iron Quotations Up

PHILADELPHIA, Oct. 5.—The Pennsylvania Railroad opened bids on Sept. 29 on about 22,000 tons of plates, shapes, bars and sheets for fourth quarter, and on Monday of this week opened bids on 160,000 to 200,000 tons of rails. There were no surprises so far as prices are concerned. Rail quotations were \$43, mill, while on shapes and bars 2c., mill, was quoted by Pittsburgh, Youngstown or Eastern mills, except in one or two cases, where 2.10c. was quoted. On plates all Eastern quotations were at 1.90c., mill. Mills in the Chicago and St. Louis districts quoted 2.10c. on shapes and bars and 2c. on plates. On sheets the quotations were also almost uniform.

Figures compiled by local sales offices for September show that sales of finished steel in this district for July, August and September were about equal. In a few instances there were slight gains in September. Plate and bar mills are in need of orders, but some makers of sheets are turning away business for the remainder of this year.

Eastern Pennsylvania makers of pig iron have put into effect an advance of 50c. a ton on foundry grades for fourth quarter and for first quarter of next year, though some are not yet quoting for delivery beyond December. Only a few small-lot sales have been made on the new basis, but the firmer attitude of producers is well supported by full order books.

Pig Iron.—Quotations for foundry pig iron for fourth quarter are now \$21.50, furnace, for No. 2 plain, \$22 for No. 2X and \$22.50 for No. 1X. One furnace put this advance into effect about two weeks ago and at the same time virtually withdrew from the market for fourth quarter. Other furnaces have made the advance within the past week, but as there is still several thousand tons of pending business which probably will be closed this week on the old basis the quotations of THE IRON AGE have not been changed for this week. Two furnace interests are virtually out of the market for the rest of the year, and the others are so well sold for October, November and December that they have little interest in making sales except to regular customers who have not fully anticipated their requirements. The largest fourth quarter inquiry is from the J. L. Mott Iron Works, Trenton, N. J., for 1500 to 2000 tons. A soil pipe company has inquired for about 2000 tons for first quarter and has been quoted \$21.50, base. Some furnaces, however, are not yet ready to consider business for that period. The opinion prevails in the local pig iron trade that prices will not advance much, if any, further. This is due to the fact that foreign iron remains a decided factor, although the offerings from abroad seem to be less numerous. German iron is being quoted at \$21, Philadelphia, duty paid, for fourth quarter, and at \$20.75 to \$21, Philadelphia, for first quarter. Last week's receipts of foreign iron at Philadelphia were only 690 tons. The Central Foundry Co. has bought 3000 or 4000 tons of iron for its plants at Dundalk, Md., and Lansdale, Pa., and for its affiliated company, the Essex Foundry Co., Newark, N. J. The Pennsylvania Railroad has bought about 1000 tons of foundry iron for its shop at Altoona, Pa. Copper free low phosphorus iron is rather scarce for early delivery, and prices are slightly higher at \$22.75 to \$23, furnace. The Standish furnace, which recently went out of blast, will resume operations in November.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$21.76 to \$22.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	22.26 to 22.76
East. Pa. No. 1X.....	22.76 to 23.26
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic delivered eastern Pa.....	28.75 to 21.50
Gray forge.....	21.00 to 22.00
Malleable.....	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	22.75 to 23.00
Copper bearing low phos. (f.o.b. furnace)	23.50 to 24.00

Ferroalloys.—Ferromanganese demand amounts to very little, but shipments on contracts are in fair volume. Buying for first quarter will have to be done, but this is not looked for until late in the year. Prices remain at \$88 to \$95, domestic furnace.

Billets.—Although makers of billets maintain quotations at \$35, Pittsburgh, for rerolling quality and \$5 higher for forging quality, concessions of at least 50c. a ton are obtainable from some makers on the more desirable orders.

Plates.—Demand for plates is not as consistent as in July and August. One or two mills are possibly exceeding a 60 per cent operation, but the average is below this, some operations not exceeding 50 per cent. The demand for universal plates is less active. Eastern mills quoted 1.90c., mill, on the recent fourth quarter inquiry of the Pennsylvania Railroad, but on general business quotations are uniformly 1.90c., Pittsburgh.

Structural Material.—Structural mills are operating at a high rate on recent specifications, there being a rush to get out material for building erection before weather conditions become unfavorable. A full operation of Eastern mills seems assured for October and possibly for November. The price situation is fairly stable and uniform outside of the immediate Philadelphia district. Here some business is on the basis of 1.90c., Pittsburgh, but at other points in the East in which the mills of this district compete for business they find little or no difficulty in getting 2c., Pittsburgh. Small lots of plain material for quick shipment sometimes command a premium of \$2 a ton.

Bars.—Some of the larger producers of bars are now finding gaps in their rolling schedules and are able to promise better deliveries on certain sizes. Quotations on steel bars seem to be uniform at 2c., Pittsburgh. On bar iron, quotations remain at 2.22c., Philadelphia.

Sheets.—Most of the sheet mills are so well supplied with orders for the remaining months of the year that there is very little pressure to sell; in fact, a few mills consider that they have sold more than is comfortable and their principal effort now lies in trying to keep their customers satisfied as to deliveries. Most of the September buying was for November and December, consumers having covered their requirements through October in the buying movement just before Sept. 1. Black sheets are quoted at 3.10c., Pittsburgh, for No. 24 gage, galvanized sheets at 3.90c. to 4c. for No. 24, and blue annealed at 2.40c., although most of the recent sales of blue annealed were at 2.30c.

Imports.—Last week imports at Philadelphia were as follows: Pig iron from Germany, 500 tons; pig iron from the Netherlands, 150 tons; pig iron from Belgium, 40 tons; iron ore from Algeria, 6600 tons; iron ore from Sweden, 7445 tons; steel blooms from France, 292 tons; ferrosilicon from Norway, 50 tons; steel bands from Luxemburg, 29 tons.

Warehouse Business.—Local warehouses have ad-

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, $\frac{3}{4}$ -in. and heavier.....	2.80c. to 3.00c.
Tank steel plates, $\frac{1}{2}$ -in.....	3.00c.
Structural shapes.....	2.75c. to 2.90c.
Soft steel bars, small shapes and iron bars (except bands).....	2.90c. to 3.00c.
Round-edge iron.....	3.50c.
Round-edge steel, iron finished, $1\frac{1}{2} \times 1\frac{1}{2}$ in.....	3.50c.
Round-edge steel, planished.....	4.30c.
Reinforcing steel bars, square, twisted and deformed.....	3.00c.
Cold-finished steel, rounds and hexagons.....	4.00c.
Cold-finished steel, squares and flats.....	4.50c.
Steel hoops.....	4.00c. to 4.25c.
Steel bands, No. 12 gage to $\frac{1}{4}$ -in., inclusive.....	3.75c. to 3.90c.
Spring steel.....	5.00c.
No. 24 black sheets.....	4.35c.
No. 10 blue annealed sheets.....	3.40c.
No. 24 galvanized sheets.....	5.30c.
Diamond pattern floor plates— $\frac{1}{4}$ -in.	5.30c.
$\frac{1}{2}$ -in.	5.50c.
Rails.....	3.20c.
Tool steel.....	8.50c.
Swedish iron bars.....	6.00c. to 6.50c.

vanced prices on black and galvanized sheets 10c. per 100 lb. and are selling on the new bases of No. 24 gage for those grades, with full mill extras. Foreign competition on bars and shapes continues a serious factor in the local warehouse situation. Bars are being sold at 2.90c. per lb. and shapes as low as 2.75c.

Old Material.—The trend of the scrap market is on the weaker side, but changes in prices within the past week have been fewer than in the weeks just preceding. Heavy melting steel is now obtainable at \$16.50 to \$17, but there has been no mill buying of importance in the last week. No. 1 railroad wrought is 50c. a ton lower at \$17 to \$17.50. Bundled sheets and turnings for steel works use are also 50c. a ton below last week's quotations. Scrap brokers believe that the bottom of the market has about been reached, but there are no indications of a turn upward. There is an over-supply of scrap at some of the steel plants, and material continues to come out rapidly enough to satisfy all demands.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel.....	\$16.50 to \$17.00
Scrap rails	16.50 to 17.00
Steel rails for rolling.....	17.25 to 17.75
No. 1 low phos., heavy, 0.04 per cent and under.....	21.00 to 22.00
Couplers and knuckles.....	18.50 to 19.00
Rolled steel wheels.....	18.50 to 19.00
Cast iron carwheels.....	17.50 to 18.00
No. 1 railroad wrought.....	17.00 to 17.50
No. 1 forge fire.....	13.50 to 14.00
Bundled sheets (for steel works)	13.00 to 13.50
Mixed borings and turnings (for blast furnace)	12.50 to 13.00
Machine shop turnings (for steel works)	13.00 to 13.50
Machine shop turnings (for rolling mill)	13.50 to 14.00
Heavy axle turnings (or equivalent)	14.50 to 15.00
Cast borings (for steel works and rolling mill).....	13.50 to 14.00
Cast borings (for chemical plant)	16.50
No. 1 cast.....	17.50 to 18.00
Heavy breakable cast (for steel works)	16.50
Railroad grate bars.....	14.00
Stove plate (for steel works)....	14.00
Wrought iron and soft steel pipes and tubes (new specifications)	15.00
Shafting	21.00 to 22.00
Steel axles	23.00 to 24.00

New York

To Investigate Alleged Dumping of Pig Iron—Liberal Bookings in Sheets

NEW YORK, Oct. 5.—A test case under the anti-dumping regulations was started by the customs house at Boston, Oct. 2, in connection with a shipment of 500 tons of German pig iron. The importer, who paid \$15.13 per gross ton at foreign port, has been asked to show cause why the anti-dumping provisions have not been violated. With an ocean freight of about \$3 and the addition of 75c. duty, the delivered price to the importer at Boston was close to \$18.88. Foreign iron may again prove a factor in seaboard markets in view of the stiffening of prices from domestic furnaces. Eastern Pennsylvania producers have all advanced prices to \$21.50, base furnace, for foundry iron, although a few quotations at \$21 on pending tonnages are still outstanding. Meanwhile Continental iron can be bought by melters at from \$20.50 to \$20.95, duty paid port of entry. There still remain a few domestic furnaces which are aggressively seeking business, notably one of the smaller New York State furnaces. Although \$19, base Buffalo, is the common quotation on deliveries in this section, attractive tonnages in a few instances have brought out concessions of 50c. or more a ton, depending on the freight rates. A central Pennsylvania furnace, taking advantage of the firmer prices on eastern Pennsylvania iron, has succeeded in taking a fair tonnage in this district, particularly in Brooklyn and other Long Island points. Sales by local brokers during the past week total about 11,000 tons. The decline in bookings has not occasioned surprise, because melters have now covered most of their fourth quarter requirements and are not yet ready to buy for first quarter. Several large sales have been made, some of them to plants outside this district. The Central Foundry Co., New York, has closed for 4000

to 5000 tons, covering the needs of its Lansdale, Pa., and Dundalk, Md., plants and of its subsidiary, the Essex Foundry, Newark, N. J. The General Fire Extinguisher Co., Providence, R. I., which was in the market for 1350 tons of No. 1X and 650 tons of No. 2X, has bought from a New York State furnace. The New York Central Railroad has closed for 750 tons of miscellaneous grades for its Frankfort, N. Y., and Elkhart, Ind., foundries. The Somerville Iron Works, Somerville, N. J., is in the market for 750 tons of foundry. The largest prospective inquiry is expected to call for 3000 tons.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East Pa. No. 2 fdy., sil. 1.75 to 2.25	\$22.89 to \$23.52
East Pa. No. 2X fdy., sil. 2.25 to 2.75	23.39 to 24.02
East Pa. No. 1X fdy., sil. 2.75 to 3.25	23.89 to 24.52
Buffalo fdy., sil. 1.75 to 2.25 (all rail)	22.91 to 23.91
No. 2 plain fdy., sil. 1.75 to 2.25 (by barge, del'd alongside in lighterage limits, N. Y. and Brooklyn)	20.00 to 21.00
No. 2 Virginia fdy., sil. 1.75 to 2.25	27.54 to 28.04

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes.....	3.34c.
Soft steel bars and small shapes.....	3.24c.
Iron bars	3.24c.
Iron bars, Swedish charcoal.....	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock—	
Rounds and hexagons.....	4.00c.
Flats and squares.....	4.50c.
Cold-rolled strip, soft and quarter hard..	6.25c.
Hoops	4.49c.
Bands	3.99c.
Blue annealed sheets (No. 10 gage).....	3.89c.
Long terme sheets (No. 28 gage).....	6.35c.
Standard tool steel.....	12.00c.
Wire, black annealed.....	4.50c.
Wire, galvanized annealed.....	5.15c.
Tire steel, 1½ x ½ in. and larger.....	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
Open-hearth spring steel, bases.....	4.50c. to 7.00c.

Per Cent Off List

Machine bolts, cut thread.....	40 and 10
Carriage bolts, cut thread.....	30 and 10
Coach screws	40 and 10
Boiler Tubes—	Per 100 Ft.
Lap welded steel, 2-in.....	\$17.33
Seamless steel, 2-in.....	20.24
Charcoal iron, 2-in.....	25.00
Charcoal iron, 4-in.....	67.00

Discounts on Welded Pipe

Standard Steel—	Black	Galv.
½-in. butt	46	29
¾-in. butt	51	37
1-in. butt	53	39
2½-6-in. lap	48	35
7 and 8-in. lap	44	17
11 and 12-in. lap.....	37	12
Wrought Iron—		
½-in. butt	4	+19
¾-in. butt	11	+9
1-1½-in. butt	14	+6
2-in. lap	5	+14
3-6-in. lap	11	+6
7-12-in. lap	3	+16

Tin Plate (14 x 20 in.)

	Prime	Seconds
Coke, 100 lb. base box.....	\$6.45	\$6.20
Charcoal, per box—	A	AAA
IC	\$9.70	\$12.10
IX	12.00	14.25
IXX	13.90	16.00

Terne Plate (14 x 20 in.)

IC—20-lb. coating	\$10.00 to \$11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25

Sheets, Box Annealed—Black, C. R. One Pass

	Per Lb.
Nos. 18 to 20.....	4.15c.
No. 22	4.30c.
No. 24	4.35c.
No. 26	4.45c.
No. 28*	4.60c.
No. 30	4.85c.

Sheets, Galvanized

	Per Lb.
No. 14	4.50c. to 4.75c.
No. 16	4.60c. to 4.85c.
No. 18	4.75c.
No. 20	4.90c.
No. 22	4.95c.
No. 24	5.10c.
No. 26	5.35c.
No. 28*	5.60c.
No. 30	6.00c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Finished Steel.—October gives every promise of being a good month in steel, fully as good as September, if not better. In some lines orders have been somewhat light since the first of the month, but there were liberal specifications last week on expiring third quarter contracts. In sheets orders are scheduled for the remainder of the year, or at any rate through November. Structural, pipe, bar and tin plate mills continue very busy. There is no improvement in the demand for cold-finished steel bars, cold-rolled strip steel and wire products, these products continuing to lag, with price weakness in the two first named. Cold-finished steel bars are now selling quite often at 2.40c., Pittsburgh, and cold-rolled strip steel has been sold below 3.25c., Pittsburgh or Cleveland. Demand for plates leaves much to be desired from the mill viewpoint, operations in the East not rising above 50 to 60 per cent of capacity. There was fairly good buying of alloy steels in the last week of September, and producers are well booked for the next two months. Structural steel awards during the week were exceptionally light in this district. A new garment center building, taking 11,000 tons, will soon be in the market for bids. The New York Central Railroad opened bids on Sept. 30 on its fourth quarter steel requirements. One Eastern plate manufacturer bid 2c., New York, on plates, but otherwise plate bids were generally at 1.90c., mill. Shapes and bars were quoted at 2c., mill. Mills in the Chicago district, of course, quoted the prices effective for delivery there, namely 2c. on plates and 2.10c. on shapes and bars. Some lack of uniformity was shown in the quotations on sheets, bids on black ranging from 2.95c. to 3.10c., base, while on galvanized the range was from 3.80c. to 4c. and on blue annealed from 2.30c. to 2.40c.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. per lb.; plates, 2.24c.; structural shapes, 2.34c.; bar iron, 2.24c.

Warehouse Business.—Purchasing for shipment from stock continues active, and prices of all warehouse products are being well maintained. Demand from the building trade for structural material and reinforcing bars is good, but competition for bar business is keen and concessions are reported, particularly when foreign steel is being considered. The market on structural steel, however, is apparently firm. Both black and galvanized sheets are in fair demand, with prices firm on the present schedule. The September volume of business has been thus far maintained for October.

Cast Iron Pipe.—Activity is still confined to purchases of small lots to complete current installations, but large private gas and water companies are reported preparing fairly sizable specifications, which will probably be issued later in the fall. Competition continues keen, but prices are fairly stable at the present range. Export inquiry for water and gas pipe continues active. The 2500 tons of pipe for Honolulu has not yet been awarded and an inquiry for 2500 tons for installation in Peru on a contract to be executed by the Foundation Co., New York, is still pending. The contract in the Dominican Republic calling for about 16,000 tons of pipe is not yet reported placed.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, \$49.60 to \$52.60; 4-in. and 5-in., \$54.60 to \$57.60; 3-in., \$64.60 to \$67.60; with \$5 additional for Class A and gas pipe.

Coke.—A wage advance, in which non-union operatives in many cases have not participated, is causing some labor shortage at non-union ovens. The strong tone of the market is bringing out a good volume of business. Furnace grade is obtainable with difficulty at \$3.75 to \$4 per ton, Connellsville, for prompt shipment, and on first quarter business as high as \$4.50 per ton has been quoted. Standard foundry ranges from \$4.75 to \$5.25 per ton, Connellsville, for prompt shipment, and very little is obtainable at the low quotation. Delivered prices of standard foundry are \$8.66 to \$9.16, Newark and Jersey City, N. J., \$8.78 to \$9.28, northern New Jersey, and \$9.54 to \$10.04, New York or Brooklyn. By-product coke continues at \$9.59 to \$10.77, delivered Newark or Jersey City, N. J.

Reinforcing Bars.—Awards of concrete reinforcing

bars in this territory have been particularly heavy in the last week, totaling nearly 6000 tons. The Concrete Steel Co. will furnish 4900 tons of this amount for two sewer construction jobs on Long Island, and further work on the Staten Island bridges at Elizabethport and Perth Amboy, N. J., will take 400 tons from the same company. There have been no further instances of price shading, recent sales having been made at the established price of 2c., Pittsburgh, for large tonnages and 2.10c. for lots under 100 tons. The New York warehouse price of 3.15c., delivered at job, seems to be holding.

Old Material.—The downward tendency of prices continues, with the number of consumers accepting shipments still considerably curtailed. Some heavy melting steel is going forward to a Pencoyd, Pa., consumer, and mills at Bethlehem and Conshohocken, Pa., are receiving shipments after careful inspection. Mills at Claymont, Del., Coatesville and Pottsville, Pa., are still temporarily suspending shipments against contracts. No. 1 heavy melting steel is being purchased at \$15.50 per ton, delivered Bethlehem, Pa., and at \$16 and slightly higher for other eastern Pennsylvania delivery. With the return to the market of mills now suspending shipment, \$16.50 per ton will probably represent the maximum of the present market. Other grades are also off slightly, showing declines of 25c. to 50c. per ton in the buying price. Specification pipe is inactive, and with no tonnage moving at present, the current quotation of \$12.25 per ton, New York, is nominal.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard).....	\$9.50 to \$10.00
Heavy melting steel (railroad or equivalent)	12.50 to 12.85
Rails for rolling.....	12.75 to 13.25
Steel car axles.....	19.75 to 20.25
Iron car axles.....	24.00 to 24.50
No. 1 railroad wrought.....	14.00 to 15.00
Forge fire	10.00 to 10.50
No. 1 yard wrought, long.....	13.00 to 14.00
Cast borings (steel mill).....	9.25 to 9.50
Cast borings (chemical).....	13.00 to 13.50
Machine shop turnings.....	9.25 to 9.50
Mixed borings and turnings.....	9.25 to 9.50
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	12.25
Stove plate (steel mill).....	9.50 to 10.00
Stove plate (foundry).....	11.25 to 11.75
Locomotive grate bars.....	10.50 to 11.00
Malleable cast (railroad).....	16.00 to 16.50
Cast iron carwheels.....	13.00 to 13.50
No. 1 heavy breakable cast.....	13.00 to 13.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$16.50 to \$17.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.)	14.00 to 14.50

Cleveland

Steel Bookings Show Gain in September —Higher Sheet Prices More General

CLEVELAND, Oct. 5.—Orders for steel entered by some of the mills during the last day or two of September brought their tonnage for the month well above that of August. Unsuccessful efforts were made by some of the large consumers to place additional tonnage against third quarter contracts for steel bars carrying a price of 1.90c. While some buyers have placed bar contracts at 2c. for the fourth quarter, others are still waiting to see if mills will not make concessions. Some carlot business is still being taken at 2.10c., but few mills are holding firmly to that price on small orders.

Demand from the automotive industry has not yet shown much falling off, although there has been some slackening in alloy steel bar business from that source. Some of the mills that supply large tonnages of sheets to the automotive industry report that their orders from that source are larger than at this time a year ago. The seasonal curtailment in automobile production evidently has not yet started, but a slowing down in steel orders in anticipation of a reduction in automobile output is looked for this month.

Other consuming interests are maintaining opera-

tions at a good rate and are buying steel as needed for early requirements. Lake shipyards have received a new inquiry for a Lake boat, requiring 4000 tons of steel. This is the first inquiry for a Lake boat that has come out for several months. The demand for plates has fallen off somewhat. In the building field there is considerable prospective business in small lots of structural material, but fabricators have little inquiry for work of any size. Plates are firm at 1.90c. Pittsburgh, and structural material at 2c.

Pig Iron.—While several foundries have placed round lots of foundry and malleable iron for the first quarter, inquiry is not yet plentiful for that delivery and most business that is being taken is for the last quarter, although some orders are being booked for deliveries extending into the first quarter. All Cleveland interests are now willing to take first quarter business, although some are not showing any particular desire to sell that far ahead. While the market was not very active the past week, local interests sold 20,000 tons or more in lots up to 1000 tons. The market has a fairly firm tone, but producers are finding it difficult to get for the first quarter iron an advance over present ruling prices for the last quarter. One Cleveland producer is now quoting foundry iron for outside shipment in this quarter at \$18.25, furnace, but is asking \$18.50 for the first quarter. Another is quoting \$18.25 for delivery into the first quarter. For Cleveland delivery the price is unchanged at \$19, furnace. Other Lake producers are quoting \$19.50, furnace, for delivery in Michigan and \$19, furnace, for shipments to western Ohio and Indiana, but considerable business at competitive points in the latter States is going to Cleveland makers which, while they have a freight disadvantage of 25c. a ton, are quoting 75c. a ton lower at furnace. The Valley market is now holding firm at \$18, furnace, at which several hundred tons were sold in the northern Ohio territory the past week, and one Valley district producer has advanced its price to \$18.50. Low phosphorus iron is firm at \$28, furnace, at which two sales aggregating 250 tons are reported.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6.01 from Birmingham:

Basic Valley furnace.....	\$17.50 to \$18.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25.....	19.50
Southern fdy., sil. 1.75 to 2.25.....	26.01
Malleable	19.50
Ohio silvery, 8 per cent.....	30.52
Standard low phos., Valley furnace	28.00

Iron Ore.—A few small-lot sales were made during the past week, and it is believed that these will about wind up the buying for the season. Vessel tonnage is being tied up for grain, and difficulties may be experienced in finding boat capacity for handling any additional round lots of ore. Ore shipments by water during September amounted to 9,621,756 tons. While this shows some falling off as compared with August, when the Lake fleet moved 10,709,942 tons, it is a gain of 2,266,883 tons over September last year. The total movement by water up to Oct. 1 was 45,230,908 tons, an increase of 2,418,882 tons over the corresponding period last year, during which the movement was 42,812,026 tons.

Semi-Finished Steel.—Specifications continue fairly heavy. Many consumers have not placed fourth quarter contracts, and some new business in small lots is coming from them for early requirements. Prices are firm at \$36, Cleveland and Youngstown, for sheet bars and \$35 for large billets and slabs.

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes.....	3.00c.
Mild steel bars.....	3.00c.
Cold-finished rounds and hexagons.....	3.90c.
Cold-finished flats and squares.....	4.40c.
Hoops and bands.....	3.65c.
No. 24 black sheets.....	3.80c.
No. 10 blue annealed sheets.....	3.25c.
No. 24 galvanized sheets.....	4.65c.
No. 9 annealed wire, per 100 lb.....	\$3.00
No. 9 galvanized wire, per 100 lb.....	3.45
Common wire nails, base, per keg.....	3.00

Sheets.—Common black sheets are still fairly plentiful at 3c., Pittsburgh, for early shipment, and some of the barrel manufacturers have been able to place round-lot orders at 2.90c. However, the price of 3.10c. has become more general the past week and is the usual quotation for the fourth quarter, although few consumers are contracting for the quarter. Blue annealed sheets are firmer, although the 2.30c. price has not disappeared. Galvanized sheets also show increased strength, with 3.95c. the ruling quotation. While mills are comfortably filled, it is largely with orders taken before the price advance.

Strip Steel.—The demand for cold-rolled strip steel is holding up well, and prices show little change. While the common range is 3.25c. to 3.40c., Cleveland, one producer is still holding to 3.60c. Sales of hot-rolled strip were heavy in September, so that mills are starting this month with good order books.

Alloy Steel.—There has been some slowing down in the demand from the automotive industry, but mills are able to keep up to recent operations. Regular prices are being maintained.

Reinforcing Bars.—Nine hundred tons of billet steel bars for a Girard, Ohio, bridge have been placed with a Pittsburgh district mill at the ruling price of 2c. New demand is confined largely to small lots. Rail steel bars are selling at 1.80c. per lb., mill, for car lots.

Warehouse Business.—Cleveland jobbers have advanced sheets \$2 a ton, following the advance made by most of the mills. Warehouse business is keeping up in good volume.

Bolts, Nuts and Rivets.—The demand for bolts and nuts, while fair, is not quite up to recent volume. Most consumers have placed fourth quarter contracts. Regular discounts are being well maintained. Rivet orders are coming out in about the same volume as during the past few weeks.

Fluorspar.—A Cleveland consumer purchased 800 tons of gravel fluorspar the past week at \$18, mine, at which the market now appears to be well established. Little activity is expected within the next few weeks, as large consumers are now covered for the last quarter.

Coke.—The Connellsville foundry coke market is firmer, and several producers have advanced prices about 25c. a ton, the present range being from \$4.50 to \$5.25, ovens. One Valley furnace is still negotiating for coke, on which it has received quotations of \$3.60 and \$3.75, ovens, although not much has been offered at the lower price. Ohio by-product foundry coke is unchanged at \$7.50, ovens, for October shipment.

Old Material.—The market continues to drag, and in the absence of consumer demand has a weak tendency. Several consumers are still holding up shipments, and there is not much activity among dealers, as they are well cleaned up on old orders. There is a limited local demand for borings, for which dealers are paying \$12. Dealers are offering \$17 for heavy melting steel for Canton delivery, but that price does not interest sellers. If Buffalo mills continue to buy round lots of Detroit scrap, this is expected to have some bearing on the market in the Cleveland and Valley districts, which have been the large consuming districts for Detroit scrap.

We quote per gross ton delivered consumers' yards in Cleveland:

Heavy melting steel.....	\$15.25 to \$15.75
Rails for rolling.....	16.25 to 16.50
Rails under 3 ft.....	17.50 to 18.00
Low phosphorus billet, bloom and slab crops	19.00 to 19.50
Low phosphorus sheet bar crops.....	18.50 to 19.00
Low phosphorus plate scrap.....	18.50 to 19.00
Low phosphorus forging crops.....	16.75 to 17.25
Cast iron borings.....	11.75 to 12.00
Machine shop turnings.....	10.25 to 10.50
Mixed borings and short turnings.....	11.75 to 12.00
Compressed sheet steel.....	14.00 to 14.25
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	15.50 to 15.75
Railroad malleable	17.50 to 18.00
Light bundled sheet stampings.....	12.00 to 12.50
Steel axle turnings.....	12.50 to 13.00
No. 1 cast.....	16.50 to 17.00
No. 1 busheling.....	12.50 to 13.00
No. 2 busheling.....	11.75 to 12.00
Drop forge flashings, 15 in. and under	11.50 to 12.00
Railroad grate bars.....	12.50 to 13.00
Stove plate	12.50 to 13.00
Pipes and flues.....	10.00 to 10.50

San Francisco

New Ferry-Boats Take 2400 Tons of Steel —6500 Tons of German Coke Arrives

SAN FRANCISCO, Oct. 2 (*By Air Mail*).—Four new ferry-boats, each requiring 400 tons of plates and 200 tons of shapes, were awarded during the week by the Southern Pacific Co., as follows: one each to the Bethlehem Shipbuilding Corporation and the General Engineering & Dry Dock Co., San Francisco, and two to the Moore Dry Dock Co., Oakland, Cal. With these three awards and the one of a week ago, all of the ferry-boat contracts for the Southern Pacific Co. have been let. The total amount of steel required for building the six boats is 3400 tons. The Golden Gate Ferry Co., San Francisco, has placed contracts for three new ferry-boats, but these will be constructed principally of wood.

During the week Meyer, Wilson & Co., local importers, received a shipment of 6500 tons of German by-product coke, all of which has been sold to users in the San Francisco Bay district. This is understood to be the largest single shipment of German fuel ever received for local distribution.

Considerable interest is being shown in the newly formed steel consortium in Europe. A number of local steel men are inclined to believe that during the first half of 1927 imports of European iron and steel will increase substantially, particularly on the Pacific Coast, unless an effective barrier—possibly something of a competitive nature—can be raised to prevent it.

Pig Iron.—The Southern Pacific Co. has placed 50 tons of Bessemer iron with a Chicago furnace. There is very little buying and no inquiries of importance. Quotations are unchanged.

*Utah basic	\$25.00 to \$26.00
*Utah foundry, sil. 2.75 to 3.25	25.00 to 26.00
*English foundry, sil. 2.75 to 3.25	25.00
*Indian foundry, sil. 2.75 to 3.25	25.00
*German foundry, sil. 2.75 to 3.25	24.25
*Dutch foundry, sil. 2.75 to 3.25	22.50
*Belgian foundry, sil. 2.75 to 3.25	22.00

*Delivered San Francisco.

**Duty paid, f.o.b. cars San Francisco.

Shapes.—Structural lettings for the week total 3010 tons. Few fresh inquiries have developed which call for over 100 tons. Most of the local fabricating shops are busy. The increasing number of small jobs is noteworthy. The largest individual letting, 725 tons, for the St. Joseph's Hospital, San Francisco, was taken by Dyer Brothers. Eastern mills continue to quote plain material at 2.35c., c.i.f. Coast ports.

Plates.—The Southern California Edison Co., Los Angeles, is taking bids on 7750 tons for a pipe line and syphons. Of this tonnage, 6500 tons is for a pipe line for the Huntington and Shaver Lakes project, and 1250 tons is for syphons for the Mono-Bear project. No lettings of over 100 tons were reported during the week. Eastern mills continue to quote plates at 2.30c., c.i.f. Coast ports.

Bars.—Jobbers' quotations on reinforcing bars are now about as follows: 2.30c. to 2.35c., base, per lb. on lots of 200 tons, and 2.40c. to 2.50c., base, per lb. on smaller lots. There have been indications recently which lead to a belief that out-of-stock quotations on concrete bars are likely to strengthen. The largest individual letting of the week, 400 tons, for buildings for the Standard Mfg. Co., Richmond, Cal., was taken

by an unnamed San Francisco jobber. Fresh inquiry is for small lots, although a good deal of work is pending which will require a substantial aggregate tonnage.

Cast Iron Pipe.—The Grinnell Co. of the Pacific has been awarded 287 tons of 12-in. Class B cast iron pipe by the City of Santa Cruz, Cal. The city of Yakima, Wash., is taking bids on about 421 tons of 6, 8, 10 and 12-in. Class C pipe. Quotations are unchanged at about \$50, base, water shipment, San Francisco.

Steel Pipe.—The city of Yakima, Wash., is taking bids on 468 tons of 6, 8, 12 and 16-in. plain end line pipe. No lettings of importance have been reported.

Warehouse Business.—Buying is referred to by most jobbers as spotty. Inquiries, for the most part, are small. Local jobbers have changed their quotations on blue annealed sheets to conform with the recent mill advance of \$2 a ton.

Sheets.—Inquiries are few and call for unimportant lots, and there are few indications of any large buying in the immediate future. Quotations are as follows: No. 24 gage galvanized sheets, 3.85c. to 4c., base Pittsburgh; No. 24 gage black sheets, 3c. to 3.10c., base, and No. 10 blue annealed sheets, 2.30c. to 2.40c., base.

Coke.—The 6500 tons of German coke brought in this week has all been sold to local and East Bay users at about \$12 to \$12.50 per net ton at incoming dock. A local importer recently made inquiries about the possibility of obtaining English fuel, with the result that he has contracted for Continental coke for his early 1927 requirements.

Birmingham

Price Reduction Brings Out Pig Iron Buying—Large Rail Orders in Sight

BIRMINGHAM, Oct. 5.—Reduced prices on pig iron brought out considerable buying the past week. Surplus stocks of iron on furnace yards are smaller than at the first of the year but are sufficient to take care of any probable excess in business over production. The Sloss-Sheffield Steel & Iron Co. has blown out its Gadsden, Ala., furnace, but has four others making foundry iron. There is now a total of 11 Alabama furnaces on foundry iron. There is no inclination on the part of producers to take on tonnage for delivery in first quarter of next year. Cast iron pressure pipe makers have been active in the market and have purchased a portion of their probable needs during the next three months. Smaller melters of iron have also placed orders, and total purchases during the past week bulk large. Melt is well maintained throughout this district and foundry stocks, in some instances are shrinking. Melts are not pressing for further reductions in prices, although the market is not strong. Ten blast furnaces are on basic iron.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	\$20.00
No. 1 foundry, 2.25 to 2.75 sil.	20.50
Basic	20.00
Charcoal, warm blast	30.00

Rolled Steel.—Railroads and other interests have placed liberal contracts for delivery during remainder of year and also into 1927. The rail order from the Louisville & Nashville Railroad, calling for 67,600 tons, will be followed by liberal tonnages from the Southern Railway System, the St. Louis-San Francisco Railway, the Central of Georgia, the Illinois Central Railroad and others. The Ensley rail mill is operating at capacity, with prospects of maintaining that rate indefinitely. The operations of fabricating shops in this district show no signs of lagging. Fifteen hundred tons of rails are being moved down the Warrior River this week from the Ensley mills for export through the port of Mobile. Ruling mill prices, base Birmingham, are: Structural shapes and bars, 2.15c. to 2.25c. per lb.; plates, 2.05c. to 2.15c.; No. 24 black sheets, 3.30c. to 3.40c.; No. 10 blue annealed sheets, 2.60c. to 2.70c.; No. 24 galvanized sheets, 4.15c. to 4.25c.

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes	3.30c.
Mild steel bars and small angles	3.30c.
Small channels and tees, $\frac{3}{4}$ -in. to 2 $\frac{1}{2}$ -in.	3.90c.
Spring steel, $\frac{1}{4}$ -in. and thicker	5.00c.
No. 24 black sheets	4.90c.
No. 28 black sheets	5.15c.
No. 10 blue annealed sheets	4.00c.
No. 24 galvanized sheets	5.65c.
No. 28 galvanized sheets	6.15c.
Common wire nails, base per keg	\$3.75
Cement coated nails, 100-lb. keg	3.75
Cement coated nails, count kegs	3.00

Cast Iron Pipe.—Pressure pipe shops are operating at capacity but are still behind in shipments. New business, however, is not so active as a few weeks ago, but pipe makers are confident that their operations will continue active through the remainder of the year and well into the winter. Concessions in foundry pig iron prices brought about considerable buying of iron for last quarter needs, and further buying by pipe shops is under consideration. In soil pipe, business is still slow and production unsatisfactory.

Coke.—Further contracts have been placed, pointing to a stronger market. Quotations range up to \$6 per ton, Birmingham, for spot foundry coke. There is a good demand for coke in this territory as well as from other districts.

Old Material.—Buying has become active, and a considerable tonnage has been booked by dealers during the past week. Heavy melting steel has been purchased in quantity, and a good deal of cast scrap is being bought. Prices, however, remain weak, heavy melting steel ranging from \$13 to \$14. Dealers are working night and day forces preparing scrap to meet the requirements of customers. The decline in pig iron prices is believed to be one of the causes for the sudden revival of interest in scrap.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel.....	12.00 to 13.00
Railroad wrought.....	12.00 to 13.00
Steel axles.....	17.00 to 18.00
Iron axles.....	17.00 to 18.00
Steel rails.....	13.00 to 14.00
No. 1 cast.....	16.50 to 17.00
Tramcar wheels.....	16.00 to 17.00
Carwheels.....	16.00 to 16.50
Stove plate.....	14.00 to 14.50
Machine shop turnings.....	7.50 to 8.00
Cast iron borings.....	7.50 to 8.00
Rails for rolling.....	15.00 to 16.00

Cincinnati

Pig Iron Buying Less Active—Scrap Weak—Sheets Stronger

CINCINNATI, Oct. 5.—Pig iron buyers have manifested little interest in the past week, and sales in this territory were limited to approximately 4000 tons. Consumers, however, are taking contract requirements at a satisfactory rate. Furnaces in the Ironton district are asking \$20, base Ironton, for foundry grades, but are selling only small quantities at that price. Valley and Lake producers have become less important factors in the local market. They are making low quotations in central Ohio and in Indiana and have been successful in booking considerable tonnage there. The recent reduction of Alabama iron to \$20, base Birmingham, failed to stimulate sales. While some orders ranging from single carloads up to 200 tons have been taken, the movement of Southern iron to points north of the Ohio River is inconsequential. Tennessee iron has dropped to \$20, base Birmingham, to meet the competition from Alabama sellers. Jackson County silvery iron is steady at \$27.50, base furnace, for 8 per cent, and there is little likelihood of a change in the near future. Malleable grades are commanding \$19.50 to \$20, base furnace, in Cincinnati, but the low prices made by Lake furnaces in central and northern Ohio have necessitated lowering quotations to \$19, furnace, on sales in that territory. The Columbia Sanitary Mfg. Co., Louisville, is asking for 500 tons of Northern or Southern foundry iron. Otherwise, inquiries are confined to small lots.

Based on freight rates of \$3.69 from Birmingham and \$1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base).....	\$23.69
Alabama fdy., sil. 2.25 to 2.75.....	24.19
Tennessee fdy., sil. 1.75 to 2.25.....	23.69
Southern Ohio silvery, 8 per cent.....	29.39
So. Ohio fdy., sil. 1.75 to 2.25.....	\$21.39 to 21.89
So. Ohio malleable.....	20.89

Finished Material.—There has been a slight increase in specifications and orders in the past week. Agricultural implement manufacturers are beginning to order material at a better rate. Railroads also are purchasing an increased amount, and other consumers are

taking a normal supply. Buyers, however, are showing no inclination to anticipate their needs, despite the fact that many grades of material cannot be delivered in less than four to six weeks. In the sheet market producers are winning out in their efforts to advance prices \$2 a ton. Tonnage placed in the past week has been heavy, and much of it has gone at the new prices of 3.95c., base Pittsburgh, for galvanized sheets and 3.10c. for black sheets. Several independent mills still are quoting on the old basis, but have only a limited stock to offer. Blue annealed sheets are bringing 2.30c. to 2.40c., base Pittsburgh, with the latter price gaining in strength. Automobile body sheets remain at 4.40c., base Pittsburgh. Specifications and orders for bars and structural shapes at 2c., base Pittsburgh, have been satisfactory. The demand for tank plates at 1.90c., base Pittsburgh, has been about normal. Considerable wire business has been placed at river points in the past two weeks. Practically all of it has been sold on a basis of \$2.65 per keg, base Ironton, for common wire nails, and \$2.50 per 100 lb., base Ironton, for plain wire, plus the barge rate to the ultimate destination. Fabricators are well engaged and have enough work ahead to assure operations on the present scale for the next three months. The movement of cold-rolled products has held up well.

Reinforcing Bars.—Bids have been taken on 350 tons of bars for the new plant of the John Van Range Co., Cincinnati. Several other sizable jobs, including 1200 tons for the Rapid Transit Commission here, are pending. New billet bars are quoted at 2c., base Pittsburgh, and rail steel bars at 1.90c., base mill.

Warehouse Business.—Sales in the past week were only moderate in volume. Local jobbers expect October to be a better month than September, during which business attained fairly satisfactory proportions. Prices remain undisturbed.

Coke.—Though important sellers of by-product foundry coke have set the price at \$7.50, ovens, or \$9.64, delivered Cincinnati, during October, the Portsmouth By-Product Coke Co. is soliciting business at 50c. a ton under that figure. At Detroit by-product domestic coke has advanced 50c. a ton to \$8.50, ovens, for outside shipments and \$9.25 for local delivery. Shipments of by-product domestic coke last month were about 20 per cent ahead of those in August. Reports from Detroit state that domestic coke shipped there on consignment still is clogging the market. In the Wise County district so many producers have turned their attention to the production and sale of coal that the output of beehive coke has been somewhat curtailed. A local dealer has sold 1000 tons of Wise County foundry coke to an Illinois consumer for delivery during the next 60 days.

Old Material.—The market continues to sag. Mills are well stocked to meet their requirements during the next two months, and little buying is expected in the intervening period. Dealers feel that later they will be able to secure the prices they now are asking. They are refusing, therefore, to sell material at the prices which mills are willing to pay. Foundry grades

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes.....	3.40c.
Bars, mild steel or iron.....	3.20c. to 3.30c.
Reinforcing bars.....	3.20c. to 3.30c.
Hoops.....	4.00c. to 4.25c.
Bands.....	3.95c.
Cold-finished rounds and hexagons.....	3.85c.
Squares.....	4.35c.
Open-hearth spring steel.....	4.75c. to 5.00c.
No. 24 black sheets.....	4.05c.
No. 10 blue annealed sheets.....	3.60c.
No. 24 galvanized sheets.....	4.90c.
Structural rivets.....	3.75c.
Small rivets.....	.65 per cent off list
No. 9 annealed wire, per 100 lb.....	\$3.00
Common wire nails, base per keg.....	2.95
Cement coated nails, base per 100-lb. keg.....	3.15
Chain, per 100 lb.....	7.55
Net per 100 Ft.	
Lap welded steel boiler tubes, 2-in.....	\$18.00
4-in.....	38.00
Seamless steel boiler tubes, 2-in.....	19.00
4-in.....	39.00

are sluggish. Prices, although showing a weak tendency, have not changed.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel.....	\$13.50 to \$14.00
Scrap rails for melting.....	13.00 to 13.50
Short rails.....	18.50 to 19.00
Relaying rails.....	26.50 to 27.00
Rails for rolling.....	14.50 to 15.00
Old carwheels.....	12.50 to 13.00
No. 1 locomotive tires.....	17.50 to 18.00
Railroad malleable.....	15.00 to 15.50
Agricultural malleable.....	14.00 to 14.50
Loose sheet clippings.....	8.00 to 8.50
Champion bundled sheets.....	9.50 to 10.00
Per Net Ton	
Cast iron borings.....	7.50 to 8.00
Machine shop turnings.....	7.00 to 7.50
No. 1 machinery cast.....	18.00 to 19.00
No. 1 railroad cast.....	15.00 to 15.50
Iron axles.....	20.50 to 21.00
No. 1 railroad wrought.....	10.00 to 10.50
Pipes and flues.....	8.50 to 9.00
No. 1 busheling.....	10.00 to 10.50
Mixed busheling.....	6.50 to 7.00
Burnt cast.....	7.50 to 8.00
Stove plate.....	10.00 to 10.50
Brake shoes.....	10.50 to 11.00

St. Louis

Pig Iron Buying Gains as Foundry Melt Increases—Active Sheet Demand

ST. LOUIS, Oct. 5.—With increased melt due to foundries extending their operations to five and six days a week, the buying movement which began a week ago has continued during the last seven days. Of 3800 tons of foundry grades sold by the St. Louis Coke & Iron Corporation, some orders lap over into the first quarter of next year, although there has been no buying specifically for that delivery. A Kansas City melter has bought 1000 tons, another Kansas City concern and an upper Illinois melter have purchased 500 tons each, and a St. Louis melter has closed for 300 tons for immediate shipment. Inquiries before the trade total about 4000 tons, including three for 500 tons each.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, \$2.16 freight from Chicago, \$4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25...	\$23.16
Northern malleable, sil. 1.75 to 2.25.....	23.16
Basic.....	23.16
Southern fdy., sil. 1.75 to 2.25.....	24.42
Granite City iron, sil. 1.75 to 2.25.....	\$22.81 to 23.31

Finished Iron and Steel.—In the early part of the week there was a let-up in the buying of sheets, but the first days of the last quarter saw a fresh spurt in orders. Mills are still far behind in deliveries. Jobbers in agricultural districts, where galvanized sheets are badly needed for farm repairs are especially insistent on early deliveries. Tank plates are less active. Warehouse business continues good.

Coke.—A heavy demand for foundry coke is coming from all parts of the country, and by-product ovens are shipping their full production. Domestic coke was advanced 25c. a ton on Oct. 1. Cooler weather in the North has resulted in stronger demand.

Old Material.—The market is demoralized, and

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes.....	3.25c.
Bars, mild steel or iron.....	3.15c.
Cold-finished rounds, shafting and screw stock.....	3.75c.
No. 24 black sheets.....	4.45c.
No. 10 blue annealed sheets.....	3.60c.
No. 24 galvanized sheets.....	5.25c.
Black corrugated sheets.....	4.65c.
Galvanized corrugated sheets.....	5.30c.
Structural rivets.....	3.65c.
Boiler rivets.....	3.85c.
Per Cent Off List	
Tank rivets, $\frac{7}{8}$ -in. and smaller.....	.70
Machine bolts.....	.50 and 5
Carriage bolts.....	.47 $\frac{1}{2}$
Lag screws.....	.55 and 5
Hot-pressed nuts, square, blank or tapped, 3.25c. off per lb.	
Hot-pressed nuts, hexagons, blank or tapped, 3.75c. off per lb.	

prices again are lower. Too much material is being offered by the railroads and from other sources. This is having a depressing effect, especially because there is no consumer demand to speak of. New railroad lists include: Pennsylvania, 40,000 tons; Missouri Pacific, 6500 tons; Chicago, Milwaukee & St. Paul, 2000 tons; Terminal Railway Association of St. Louis, 1600 tons; St. Louis Southwestern, 750 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails.....	\$12.00 to \$12.50
Rails for rolling.....	16.25 to 16.75
Steel rails less than 3 ft.....	16.75 to 17.25
Relaying rails, 60 lb. and under.....	20.50 to 23.50
Relaying rails, 70 lb. and over.....	26.50 to 29.00
Cast iron carwheels.....	15.25 to 15.75
Heavy melting steel.....	13.25 to 13.75
Heavy shoveling steel.....	13.25 to 13.75
Frogs, switches and guards cut apart.....	15.50 to 16.00
Railroad springs.....	17.50 to 18.00
Heavy axle and tire turnings.....	11.00 to 11.50
No. 1 locomotive tires.....	16.00 to 16.50
Per Net Ton	
Steel angle bars.....	13.00 to 13.50
Steel car axles.....	18.50 to 19.00
Iron car axles.....	21.00 to 21.50
Wrought iron bars and transoms.....	19.75 to 20.25
No. 1 railroad wrought.....	12.00 to 12.50
No. 2 railroad wrought.....	11.75 to 12.25
Cast iron borings.....	9.50 to 10.00
No. 1 busheling.....	10.75 to 11.25
No. 1 railroad cast.....	14.75 to 15.25
No. 1 machinery cast.....	17.00 to 17.50
Railroad malleable.....	13.00 to 13.25
Machine shop turnings.....	7.00 to 7.50
Bundled sheets.....	8.00 to 8.50

Boston

Pig Iron Prices Are Irregular—Concrete Bar Market Weak

BOSTON, Oct. 5.—Pig iron prices are irregular. Local representatives of Alabama furnaces have dropped prices \$1 a ton to \$20, base Birmingham. Eastern Pennsylvania iron, in some instances, is 50c. a ton higher at \$21.50, base furnace, but \$21 can still be done. Buyers report that New York State No. 2X is available at \$20, furnace, although the openly quoted price is \$20.50. Buffalo iron appears pegged at \$19, base furnace, with recent sales at that price for last and first quarters. Western Pennsylvania furnaces, with a \$1 higher freight rate, are meeting the delivered price from Buffalo. A Providence, R. I., foundry, which was expected to close on 2000 tons a week ago, will do so within a day or so. Current buying is very largely for mixture purposes, mostly in 100 to 300-ton lots, and covers eastern as well as western Pennsylvania, Buffalo, New York State, Massachusetts and Alabama irons. In the aggregate, it amounts to several thousand tons.

We quote delivered prices on the basis of the latest sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25.....	\$24.65 to \$25.15
Tast. Penn., sil. 2.25 to 2.75.....	25.15 to 25.65
Buffalo, sil. 1.75 to 2.25.....	22.91 to 23.91
Buffalo, sil. 2.25 to 2.75.....	23.41 to 24.41
Virginia, sil. 1.75 to 2.25.....	27.92 to 28.42
Virginia, sil. 2.25 to 2.75.....	28.42 to 29.42
Alabama, sil. 1.75 to 2.25.....	29.60
Alabama, sil. 2.25 to 2.75.....	30.10

Finished Material.—The market for plates is firm at 1.90c., base Pittsburgh, with a moderate amount of business passing. Boiler makers, in most instances, are busier than they have been in two or three months. Standard shapes are holding well at 2c., base Pittsburgh. A majority of the New England fabricators have sufficient work on hand to keep them operating at the present rate for the rest of 1926. During the past month they have booked an unusually large number of small contracts, on which there is an excellent profit. The largest job pending is 2000 tons for a bridge between Boston and Cambridge, Mass., and 1500 tons for a Masonic temple, Providence, R. I., is the second largest project. Bars are firm at 2c., base Pittsburgh. Reinforcing bars, on the other hand, are weak. On one recent large job in the market as low as 2.50c. per lb. was bid.

Coke.—The New England Coal & Coke Co. and

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes.....	3.265c.
Flats, hot-rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway, rounds	6.60c.
Norway, squares and flats.....	7.10c.
Structural shapes—	
Angles and beams.....	3.365c.
Tees	3.365c.
Zees	3.465c.
Plates	3.365c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hexagons.....	4.05c.
Squares and flats.....	4.55c.
Toe calk steel.....	6.00c.

the Providence Gas Co. made no change in the price of by-product foundry coke for October. It remains \$12 a ton, delivered, within a \$3.10 freight rate zone, the same as it has been since June. New England foundries are specifying more freely against last-half contracts with these ovens. Two Connellsville district ovens usually active in New England have withdrawn from the market for the rest of 1926, being sold up. Good Connellsville foundry coke, however, is offered here at \$5.25 to \$5.50 a ton, ovens, or \$1.20 to \$1.40 below the delivered price on New England fuel.

Old Material.—There is little life in the market. Some new buying of heavy melting steel for eastern Pennsylvania delivery is reported at \$11 a ton, on cars shipping point. There have also been purchases against old contracts for Pittsburgh district delivery at \$11.50 to \$11.75, mostly \$11.50, these prices representing a drop of 25c. to 50c. a ton. Railroad wrought is difficult to sell even at \$12 a ton, a drop of 50c. a ton, and rolling mill borings are lower, owing to the withdrawal of buyers. New buying of machine shop turnings at \$8.50 is noted, while a few car lots were taken last week on old contracts at \$8.75 to \$9. Rails for rerolling are difficult to move. Scrap rails are relatively firmer than heavy melting steel. There is just enough interest shown in forge scrap, bundled skeleton and cotton ties to hold prices steady.

The following prices are for gross-ton lots delivered consuming points:

Textile cast	\$18.50 to \$19.00
No. 1 machinery cast.....	18.50 to 19.00
No. 2 machinery cast.....	16.50 to 17.00
Stove plate	14.00 to 14.50
Railroad malleable	19.50 to 20.00

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$11.00 to \$11.75
No. 1 railroad wrought.....	12.00 to 12.50
No. 1 yard wrought.....	11.00 to 11.50
Wrought pipe (1 in. in diameter, over 2 ft. long).....	10.50 to 11.00
Machine shop turnings.....	8.00 to 8.50
Cast iron borings, chemical.....	10.50 to 11.00
Cast iron borings, rolling mill.....	8.00 to 8.50
Blast furnace borings and turnings	8.00 to 8.50
Forged scrap	9.00 to 9.50
Bundled skeleton, long.....	9.00 to 9.50
Forged flashings	9.00 to 9.50
Bundled cotton ties, long.....	8.00 to 8.50
Bundled cotton ties, short.....	8.50 to 9.00
Shafting	16.50 to 17.00
Street car axles.....	16.50
Rails for rerolling.....	12.00
Scrap rails	11.25 to 11.75

Stainless steel and stainless iron produced by the Bethlehem Steel Co., Bethlehem, Pa., are described in a booklet published by that company. Bethlehem stainless steel and iron can be rolled, forged, pressed and hammered. Its chromium content is given as 0.115 to 0.18 per cent, depending upon the purpose for which the metal is to be used, while the carbon content for stainless steel is above 0.12 per cent and for stainless iron below 0.12 per cent. Among the uses for which stainless steel and iron is recommended are the following: Airplane parts, automobile parts, machinery parts, drawing instruments, fishing tackle, golf club heads, musical instruments, phonograph parts, hardware and many other similar products.

Buffalo

Sizable Inquiries for Pig Iron in Market
—Steel Output at 85 Per Cent

BUFFALO, Oct. 5.—Furnaces have two or three sizable inquiries occupying their attention this week. One is from a Danville, Pa., foundry for 3000 tons of foundry iron for the last quarter. The probability is that this will not come to Buffalo district furnaces but will be placed nearby. The Kensington-Davis foundry in Buffalo is in the market for 2000 tons of foundry iron, and another buyer in the State wants 2000 tons. The inquiry from the Massey-Harris Co. noted last week is for Canadian delivery and, according to reports, has not yet been placed. It is for the first quarter. One or two others, totaling 1000 tons, are before the trade, together with some smaller ones. The ruling quotation to foundries in this district on last quarter and first quarter business is \$20, furnace.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdy., sil. 1.75 to 2.25..	\$19.00 to \$20.00
No. 2X foundry, sil. 2.25 to 2.75..	19.50 to 20.50
No. 1X foundry, sil. 2.75 to 3.25..	20.50 to 21.50
Malleable, sil. up to 2.25.....	20.00
Basic	19.00
Lake Superior charcoal.....	27.25

Finished Iron and Steel.—Mill operations still average 85 per cent. Bars are quotable at 2.365c., Buffalo, on small lots and 2.265c. on large lots, with shapes at 2.265c. and plates at 2.165c. Business in sheets is good, with prices firm and mills busy. Demand for structural steel is active, the feature of the week being the award of the new Statler Theater, Buffalo, 500 tons. Reinforcing bar business is promising. One maker took about 125 tons of road mesh for 5½ miles of Pennsylvania highway. From Rochester comes a request for bids on a garage, 250 to 300 tons, and an addition to a large hotel at Erie, Pa., will take a round tonnage. There is also about 150 tons of reinforcing bars in the Statler Theater. These have not been let.

Old Material.—Mill consumption goes on at a rapid rate, but there has been little new buying and the market is rather quiet. One mill is buying its usual quota of small lots from day to day. There is no speculative activity by dealers, because the market is sentimentally weak. Selective No. 1 heavy melting steel still ranges from \$17.50 to \$18, but the mill that is buying the ordinary grade has no difficulty in getting steel for \$15.50 to \$16. No. 1 cast and stove plate are active, with a great many orders out. One consumer is buying stove plate actively. Low phosphorus and blast furnace scrap are both very quiet. Machine shop turnings are a little weaker, being quotable at \$10.50 to \$10.75. Bundled sheets and grate bars are likewise down.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel.....	\$15.50 to \$16.00
Selected No. 1 heavy melting steel	17.50 to 18.00
Low phosphorus	18.50 to 19.00
No. 1 railroad wrought.....	15.00 to 15.50
Carwheels	17.00 to 17.50
Machine shop turnings.....	10.50 to 10.75
Mixed borings and turnings.....	12.00 to 12.50
Cast iron borings.....	12.00 to 12.50
No. 1 busheling.....	15.50 to 16.50
Stove plate	15.25 to 15.50
Grate bars	13.00 to 13.50
Hand bundled sheets.....	10.50 to 11.50
Hydraulic compressed	14.50 to 15.00
No. 1 machinery cast.....	16.00 to 16.25
Railroad malleable	16.50 to 17.00
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50
Drop forge flashings.....	13.75 to 14.25

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes.....	3.40c.
Mild steel bars.....	3.30c.
Cold-finished shapes	4.45c.
Rounds	3.95c.
No. 24 black sheets.....	4.30c.
No. 10 blue annealed sheets.....	3.80c.
No. 24 galvanized sheets.....	5.15c.
Common wire nails, base per keg.....	\$3.90
Black wire, base per 100 lb.....	3.90

Toronto

Pig Iron Prices Stable—Scrap Demand Improves

TORONTO, ONT., Oct. 5.—The ruling Canadian price on pig iron has not changed since August, when it was reduced to a level about 30c. per ton below the delivered price on Buffalo iron, putting it a few cents lower than at any time for several years. Prices delivered at Toronto are as follows: No. 1 foundry (2.25 to 2.75 per cent silicon), \$24.80; malleable, \$24.80; No. 2 foundry (1.75 to 2.25 per cent silicon), \$24.30. Delivered prices at Montreal are: No. 1 foundry, \$27.20; malleable, \$27.20; No. 2 foundry, \$26.70. Basic iron is quoted at \$21, furnace

Old Material.—Some improvement in demand featured the Toronto iron and steel scrap market during the week. Buying was chiefly from those consumers who had allowed their holdings to run low and was for the purpose of replenishing them. Heavy melting steel, turnings, machinery cast and malleable scrap were featured in transactions of the week and several rather good orders were closed. The demand from the Hamilton, Ont., district became more active during the past two or three days. In the Montreal market business fell off, with a consequent low demand for practically all materials both for local consumption and on export account. While no change has been made in the appended prices, a few recent transactions are reported to have been closed at prices about 50c. per ton above these levels. In the Montreal dis-

trict, however, the price situation is somewhat softer. Dealers' buying prices are as follows:

	Toronto	Montreal
Per Gross Ton		
Steel turnings	\$8.50	\$8.00
Machine shop turnings.....	8.50	8.00
Wrought pipe	6.00	6.00
Rails	11.00	10.00
No. 1 wrought scrap.....	11.00	14.00
Heavy melting steel.....	11.00	9.00
Steel axles	16.00	17.00
Axles, wrought iron.....	18.00	19.00
Boiler plate	10.00	8.00
Heavy axle turnings.....	8.50	9.00
Cast borings	7.50	8.50
Per Net Ton		
Standard carwheels	15.00	16.00
Malleable scrap	14.00	14.00
Stove plate	10.00	13.00
No. 1 machinery cast.....	16.00	18.00

Copper from the Belgian Congo

Each of the past five years has shown a new high record of output of copper from the mines of the Union Minière du Haut Katanga. Previous to 1921 the greatest amount produced in any one year was 27,462 metric tons, in 1917, according to the United States Department of Commerce. Beginning with 1921, however, at 30,464 tons, the succeeding figures have been as follows: 1922, 43,362 tons; 1923, 57,889 tons; 1924, 85,580 tons; 1925, 90,020 tons.

While this is less than 10 per cent of the copper output of the United States it nevertheless is expected to have something of an influence upon the American market, inasmuch as this copper is being shipped to Belgium, where it is going through a new refinery and thence into the markets of Continental Europe. Previously it was the practice to ship the copper produced in the Belgian Congo to refineries in the United States, then across the Atlantic for European consumption.

German Exports and Imports in First Half-Year

Supplementing the general article on page 748 of our Sept. 9 issue, the two appended tables show the details of exports and imports of iron and steel products

from Germany in May and June, together with the cumulative figures for the first six months of 1926 and the similar period of 1925.

Exports of Iron and Steel Products from Germany
(In Metric Tons)

Item	May, 1926	June, 1926	January Through June	
			1926	1925
Pig iron and ferroalloys..	42,761	31,947	210,026	107,638
Scrap	37,456	42,047	237,196	149,313
Ingots, blooms, slabs, billets and sheet bars....	16,745	23,896	127,433	37,304
Rails and accessories....	36,919	49,637	256,077	231,100
Bar iron, hoops and girders	83,755	93,766	555,514	220,641
Rolls	780	787	4,180	4,724
Plates and sheets.....	44,613	42,296	242,064	201,058
Tin plate, galvanized sheets (plain and corrugated) and other sheets	4,490	4,282	23,373	17,556
Cast iron pipe.....	6,495	6,731	39,378	35,537
Tubes and fittings.....	29,682	24,660	152,271	107,038
Bridge and other structural work	2,315	2,531	21,165	12,301
Railroad axles and wheels, tires and springs.....	4,418	6,068	29,768	42,239
Carriage and car axles...	120	197	1,371	1,679
Wire, rolled and drawn...	30,978	35,972	231,209	139,915
Wire rope and cord, barbed wire, wire gauze and cloth, etc.....	6,305	6,976	46,469	44,832
Nails and tacks.....	4,229	4,385	28,222	26,012
Screws and rivets.....	3,332	2,983	19,319	15,905
Ship anchors	59	198	868	515
Horseshoes, calks, horse-shoe nails, etc.....	196	199	1,683	1,842
Chains	836	750	4,599	4,783
Cask buoys, tanks, containers	1,346	1,800	8,750	3,298
Wagon springs	200	139	850	852
Iron castings, including machine parts*	1,282	1,263	8,180	8,386
Malleable castings and forgings, including machine parts*	1,961	2,278	11,464	24,419
Total	361,273	385,788	2,261,429	1,433,864

*Exports of certain machine parts are not reported as iron and steel products in the German official and foreign trade statistics, but are included with machinery.

Imports of Iron and Steel Products into Germany
(In Metric Tons)

Item	May, 1926	June, 1926	January Through June	
			1926	1925
Pig iron and ferroalloys..	9,019	9,043	51,333	103,919
Scrap	6,150	10,944	38,983	174,135
Ingots, blooms, slabs, billets and sheet bars....	17,631	24,603	102,876	110,809
Rails and accessories....	9,499	7,162	53,430	56,796
Bar iron, hoops and girders	31,914	41,037	160,703	269,423
Rolls	17	25	126	224
Plates and sheets.....	2,540	1,792	13,728	38,800
Tin plate, galvanized sheets (plain and corrugated) and other sheets	1,458	1,392	7,323	7,480
Cast iron pipe.....	4,307	3,497	18,783	7,948
Tubes and fittings.....	215	422	1,804	10,484
Bridge and other structural work	208	139	1,317	450
Railroad axles and wheels, tires and springs.....	17	66	194	189
Carriage and car axles...	5	4	30	38
Wire, rolled and drawn...	3,869	3,629	23,379	26,752
Wire rope and cord, barbed wire, wire gauze and cloth, etc.....	30	49	481	495
Nails and tacks.....	1	2	7	31
Screws and rivets.....	38	83	494	802
Ship anchors .....	....	....	....	30
Horseshoes, calks, horse-shoe nails, etc.....	3	10	38	375
Chains	4	7	96	90
Cask buoys, tanks, containers	7	58	206	82
Wagon springs	41	86	360	649
Iron castings, including machine parts*	392	499	2,858	2,911
Malleable castings, including machine parts*	252	343	2,098	4,749
Total	86,617	104,892	480,647	817,661

*Exports of certain machine parts are not reported as iron and steel products in the German official and foreign trade statistics, but are included with machinery.

FABRICATED STRUCTURAL STEEL

Awards the Lowest in Many Weeks—Garment Building in New York to Take 11,000 Tons

Except for one week in August and the week in which the Labor Day holidays came, the past week was the lowest in structural steel awards since last April. The total was slightly more than 18,000 tons. Included in pending jobs totaling nearly 34,000 tons is a new garment building for New York, which will require 11,000 tons. Awards follow:

NEW YORK, 526 tons in the following jobs as reported to the Structural Steel Board of Trade: Garage, 431 East Ninety-second Street, and Lawyers Mortgage Building, Mount Vernon, to McClintic-Marshall Co.; storage yard, Carrol Street, Brooklyn, and bank building alteration, Fourteenth Street and Eighth Avenue, to George A. Just Co.

NEW YORK, 1000 tons, two apartment buildings and factory, to an unnamed local fabricator.

NEW YORK, 830 tons, apartment building, 25-31 West Eighty-first Street, to Drier Iron Works.

NEW YORK, 800 tons, apartment building, Twenty-third Street, to Hay Foundry & Iron Works.

NEW YORK, 500 tons, two apartment buildings, to an unnamed local fabricator.

NEW YORK, 300 tons, Church of Our Lady of Loretta, Bleecker and Elizabeth Streets, to Harris Structural Steel Co.

BROOKLYN, 350 tons, wing and laboratory, Kings County Hospital, to Easton Structural Steel Co.

PERTH AMBOY, N. J., 100 tons, tile factory, to Guilbert Steel Co.

WILDWOOD, N. J., 500 tons, 750,000 cu. ft. gas holder for General Engineering & Management Corporation, to Stacey Mfg. Co.

PHILADELPHIA, 115 tons, Leverington Presbyterian Church, to American Brown Boveri Electric Corporation.

PHILADELPHIA, 110 tons, garage on North Twentieth Street, to Shoemaker Bridge Co.

BALTIMORE, 350 tons, Weston High School, to Dietrich Brothers.

BUFFALO, Statler Theater, 500 tons, to R. S. McMannus Steel Construction Co.

CLEVELAND, 250 tons, factory for Fisher Body Co., to Cleveland Structural Steel Co.

ADRIAN, MICH., 200 tons, 200,000 cu. ft. gas holder for Citizens Gas & Fuel Co., to Stacey Mfg. Co.

DAYTON, OHIO, 200 tons, McCall Building, to McClintic-Marshall Co.

FOSTORIA, OHIO, 900 tons, plant additions for National Carbon Co., to American Bridge Co.

NEW ALBANY, IND., 425 tons, sand digger hull for E. T. Slider Co., to Midland Barge Co., Midland, Pa.

PEKIN, ILL., 400 tons, building for the Fleischman Co., to Gage Structural Steel Co., Chicago.

LA SALLE, ILL., 175 tons, high school, to McClintic-Marshall Co.

LA GRANGE, ILL., 325 tons, high school auditorium, to Midland Structural Steel Co., Chicago.

ROCHESTER, MINN., 2500 tons, Mayo Clinic, to American Bridge Co.

MILWAUKEE, 130 tons, annex for Edwards Motor Car Co., Dodge Brothers distributor, to Worden-Allen Co.

ST. LOUIS, 900 tons, six barges for United States Engineers' Office, to American Bridge Co.

HOUSTON, TEX., 150 tons, bridge for the Houston North Shore Railroad Co., to Austin Bridge Co., Dallas.

TAMPA, FLA., 1800 tons, Florida Portland Cement Co., to Virginia Bridge & Iron Co.

LINCOLN, NEB., 400 tons, Chicago, Burlington & Quincy passenger station, to Vierling Steel Works, Chicago.

LOMPOC, CAL., 250 tons, Celite Products Co., to McClintic-Marshall Co. of California, Los Angeles.

LOS ANGELES, 275 tons, transmission towers from Hayden, Ariz., to the Coolidge Dam site near San Carlos, Ariz., for the Bureau of Indian Affairs, Department of the Interior, to Pacific Coast Steel Co.

SAN FRANCISCO, 725 tons, St. Joseph's Hospital, to Dyer Brothers.

SAN FRANCISCO, 650 tons, office building, Pine and Sansome Streets, to Central Iron Works.

SAN FRANCISCO, 100 tons, apartment building, Clay Street, to Golden Gate Iron Works.

SAN FRANCISCO, 210 tons, apartment building, Hyde and Lombard Streets, to Herrick Iron Works, Oakland.

SAN FRANCISCO, 2400 tons, Southern Pacific Co., four ferry boats, each requiring 400 tons of plates and 200 tons of shapes, awarded as follows: One each to the Bethlehem Shipbuilding Corporation and the General Engineering & Drydock Co., San Francisco, and two to the Moore Dry Dock Co., Oakland.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

BOSTON, 2000 tons, bridge for Cambridge, Mass.

LAKE PLACID, N. Y., 400 tons, building for Lake Placid Club.

NEW YORK, 11,000 tons, Unit 1, New Lefcourt Garment Center, Seventh Avenue and Twenty-second Street, Swartz & Gross, architects.

PHILADELPHIA, tonnage being estimated, power plant at Ninth and Willow Streets, for the Philadelphia Electric Co.

SALEM, N. J., 500 tons, highway bridge.

NORFOLK, VA., 900 tons, power house, Virginia Electric Car Co.

TAMPA, FLA., 400 tons, building for Fair Furniture Co.

POTTSVILLE, PA., 500 tons, theater.

CINCINNATI, 500 tons, building for John Van Range Co.

CHICAGO, 1200 tons, Lakeview apartment building.

SIOUX CITY, IOWA, 1000 tons, Orpheum Circuit Theater.

KANSAS CITY, MO., 400 tons, building for United States Gypsum Co.

DENVER, COLO., 750 tons, building for Midwest Refining Co.

KELLOGG, IDAHO, 1000 tons for a zinc plant.

CHELAIN, WASH., 2000 tons for a power plant.

ELLENSBURG, WASH., 2700 tons, United States reclamation project.

YAKIMA, WASH., 200 tons, for a municipal pipe line; bids, Oct. 4.

MERCED, CAL., 600 tons, cement plant.

LOS ANGELES, 7750 tons, pipe line and syphons for the Southern California Edison Co., for the following: 6500 tons for a pipe line for the Huntington and Shaver Lakes project, and 1250 tons for syphons for the Mono-Bear project; bids, Oct. 4.

SAN FRANCISCO, 169 tons, apartment, Larkin Street, between Greenwich and Lombard Streets.

Examiners Report on Rates for Rails, Castings, Pipe and Wire Products

WASHINGTON, Oct. 5.—The following proposed reports have been made by examiners of the Interstate Commerce Commission:

In passing upon a complaint by the West Virginia Rail Co., Examiner Harry C. Barron held that rates on iron and steel rails and products, in carloads, from Huntington, W. Va., to certain points in Kentucky, Tennessee and Virginia, were unreasonable. The report said that the commission should find that rates on rails are unreasonable to the extent that they exceed rates based upon \$2.50 per gross ton from Huntington to Winchester, Ky., and Lexington, Ky., plus proposed rates, ranging from 15c. to 24c. per 100 lb., to points on the Louisville & Nashville railroad.

Examiner A. F. Parker, passing upon a complaint of the Michigan Malleable Iron Co., Detroit, held that the fifth class rate of 16.5c. per 100 lb. on rough castings from Detroit to Toledo is unreasonable to the extent that it exceeds 14.5c.

Rates on wrought iron and steel pipe and oil well supplies in carloads from points of origin in Oklahoma to destinations in Kansas were found unreasonable by Examiner R. L. Shanafelt, in passing upon a complaint by the M. M. Valerius Oil & Gas Co.

The rate on barbed wire, wire nails and other iron and steel articles in straight or mixed carloads from South Bartonville (Peoria), Ill., to Indianapolis should not exceed 21c. per 100 lb., according to a report proposed by R. N. Trezise, in connection with a complaint made by the Keystone Steel & Wire Co., Peoria. The rate charged was 26c. per 100 lb.

Rates charged the Atlantic Oil Producing Co. on iron and steel pipe, in carloads, between points in Texas and Oklahoma were found unreasonable in a report proposed by Examiner H. C. Barron, who said that the rates should be based on the Memphis-Southwestern scale.

NON-FERROUS METAL MARKETS

The Week's Prices							
	Cents per Pound for Early Delivery						
	Oct. 5	Oct. 4	Oct. 2	Oct. 1	Sept. 30	Sept. 29	
Lake copper, New York....	14.37½	14.37½	14.37½	14.37½	14.37½	14.37½	
Electrolytic copper, N. Y.*..	14.00	14.00	14.00	14.00	14.00	14.00	
Straits tin, spot, New York..	71.50	71.62½	.....	71.20	69.55	70.12½	
Lead, New York.....	8.65	8.65	8.65	8.65	8.75	8.75	
Lead, St. Louis.....	8.35	8.35	8.35	8.35	8.45	8.45	
Zinc, New York.....	7.70	7.70	7.70	7.70	7.70	7.70	
Zinc, St. Louis.....	7.35	7.35	7.35	7.35	7.35	7.35	

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, Oct. 5.—Copper is dull and inactive, with prices unchanged on electrolytic but slightly weaker on Lake. Tin has been fairly active at high prices. The price of lead has been reduced 10 points. Zinc is slightly easier in price. Antimony is weak, declining ¼c. in a week.

Copper.—Although some of the largest consumers of copper are believed to be about ready to enter the market for nearby requirements, there has been no move in that direction during the week, and the market has been quiet, in fact dull. Orders have been confined to scattered carload lots, mostly for immediate shipment. There has been no buying of sufficient importance to test the price, which remains at 14c., f.o.b. refinery, for electrolytic, or 14.25c., delivered nearby consuming points. Lake copper is slightly easier in price for the past week, having been quoted at 14.37½c. per lb., delivered New York district.

Copper Averages.—The average price of Lake copper for September, based on daily quotations in THE IRON AGE was 14.49c., New York. The average price of electrolytic copper was 14.05c., refinery, or 14.30c., delivered.

Tin.—Scanty supplies of tin continue to keep prices at a high level. The peak during the week beginning last Wednesday and ended today (Tuesday) was reached on Monday, when sales were made at 71.62½c. per lb. Today's market was dull, but the market remained firm at 71.50c. The future trend of prices is somewhat obscure. The visible supply has been steadily declining, and while consumers have not yet been confronted with

an actual shortage so far as operations are concerned, there is very little tin in the hands of traders. The tin trade is not certain that the present high rate of consumption in industries using the bulk of the tin can long be maintained, and this, of course, is an influence as regards prices for future delivery. Prices for the more remote months, such as December and January, are lower than for spot shipment. During the week under review sales amounted to about 1000 tons, more than half of this business developing last Thursday. About two-thirds of the business was between dealers and the remainder was consumer buying. For October and November consumers are not over-supplied, and this is a factor of great strength as affecting prices for this two-month period. London prices today are: Spot standard, £317 5s.; future standard, £305; spot Straits, £324 15s.; Singapore price, £314 15s.

Lead.—The principal development was the reduction in the price of lead by the American Smelting & Refining Co. on Oct. 1 from 8.75c. to 8.65c., New York. The market remains spotty. On some days inquiries and orders are in fair volume, while on other days little or nothing has been done.

Zinc.—A moderate demand for zinc has been manifested during the week, but there has been more pressure to sell than to buy and prices have weakened slightly. Quotations throughout the week have generally been at 7.35c., St. Louis, and 7.70c., New York.

Antimony.—Quotations on antimony are ¼c. lower today (Tuesday) than a week ago. The quotation today for spot delivery was 13.62½c. per lb., duty paid, New York, as compared with 14.25c. a week ago. For future delivery today's quotation was 13.50c. More inquiry has developed than in several weeks, but no business of importance has yet been done.

Nickel.—Prices continue at 35c. per lb. for ingot nickel and 36c. per lb. for shot nickel. Electrolytic is quoted at 39c.

Aluminum.—Virgin ingot aluminum is quoted at 27c. per lb. for the remaining months of the year.

Metals from New York Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	73.50c. to 74.50c.
Tin, bar.....	74.00c. to 74.50c.
Copper, Lake.....	15.50c.
Copper, electrolytic.....	15.25c.
Copper, casting.....	14.75c.
Zinc, slab.....	8.50c. to 9.00c.
Lead, American pig.....	9.00c. to 9.50c.
Lead, bar.....	11.25c. to 12.25c.
Antimony, Asiatic.....	16.00c. to 17.00c.
Aluminum, No. 1 ingot for remelting (guaranteed over 99 per cent pure).....	30.00c. to 30.50c.
Babbitt metal, commercial grade.....	30.00c. to 40.00c.
Solder, ½ and ¼.....	43.00c. to 44.00c.

Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	75.50c.
Tin, bar.....	77.50c.
Copper, Lake.....	15.00c.
Copper, electrolytic.....	15.00c.
Copper, casting.....	14.00c.
Zinc, slab.....	8.50c.
Lead, American pig.....	9.35c.
Antimony, Asiatic.....	18.50c.
Lead, bar.....	11.50c.
Babbitt metal, medium grade.....	22.50c.
Babbitt metal, high grade.....	80.50c.
Solder, ½ and ¼.....	45.00c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

Sheets—	
High brass.....	19.37½c. to 20.37½c.
Copper, hot rolled.....	23.00c. to 24.00c.
Copper, cold rolled, 14 oz. and heavier.....	25.25c. to 26.25c.
Seamless Tubes—	
Brass.....	24.25c. to 25.25c.
Copper.....	25.00c. to 26.00c.
Brazed Brass Tubes.....	27.37½c. to 28.37½c.
Brass Rods.....	17.12½c. to 18.12½c.

From New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks.....	13.00c. to 13.25c.
Zinc sheets, open.....	13.50c. to 13.75c.

Non-Ferrous Rolled Products

Mill prices on bronze, brass and copper products have not changed since Aug. 3. Zinc sheets and lead full sheets continue to hold to the changes of July 20 and 26 respectively.

On Copper and Brass Products, Freight up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—

High brass.....	19.37½c.
Copper, hot rolled.....	23.00c.
Zinc.....	11.75c.
Lead (full sheets).....	12.50c. to 12.75c.

Seamless Tubes—

High brass.....	24.25c.
Copper.....	25.00c.

Rods—

High brass.....	17.12½c.
Naval brass.....	19.87½c.

Wire—

Copper.....	16.37½c.
High brass.....	19.87½c.
Copper in Rolls.....	21.87½c.
Brazed Brass Tubing.....	27.37½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 9 to 10 gage, 3 to 30 in. wide.....	37.50c.
Tubes, base.....	48.00c.
Machine rods.....	34.00c.

Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

Sheets—	Base per Lb.
High brass	19 3/4 c. to 20 3/4 c.
Copper, hot rolled	23c.
Copper, cold rolled, 14 oz. and heavier ..	25 1/4 c.
Zinc	12.25c.
Lead, wide	11.25c.
Seamless Tubes—	
Brass	24 1/4 c.
Copper	25c.
Brazed Brass Tubes	27 3/4 c.
Brass Rods	17 1/4 c.

Non-Ferrous Metals at Chicago

OCT. 5.—Transactions in non-ferrous metals are steady and at about the rate of the previous week. Tin has advanced, and lead and antimony are easier. The old metals are quiet and without feature.

We quote, in carload lots, Lake copper, 14.50c.; tin, 72c.; lead, 8.45c.; zinc, 7.45c.; in less than carload lots, antimony, 16c. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper bot-

Old Metals, Per Pound, New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	12.00c.	13.50c.
Copper, heavy and wire	11.75c.	12.50c.
Copper, light and bottoms	9.75c.	11.00c.
Brass, heavy	7.25c.	9.00c.
Brass, light	6.25c.	8.00c.
Heavy machine composition ..	8.75c.	10.125c.
No. 1 yellow brass turnings ..	8.50c.	9.25c.
No. 1 red brass or composition turnings	8.25c.	9.25c.
Lead, heavy	7.25c.	7.75c.
Lead, tea	5.50c.	6.25c.
Zinc	4.25c.	4.75c.
Sheet aluminum	17.00c.	19.00c.
Cast aluminum	17.00c.	19.00c.

toms, 9.75c.; red brass, 9.25c.; yellow brass, 8c.; lead pipe, 6.75c.; zinc, 5c.; pewter, No. 1, 35c.; tin foil, 43.50c.; block tin, 52c.; aluminum, 17.75c.; all being dealers' prices for less than carload lots.

REINFORCING STEEL**Awards Include 3400 Tons for Brooklyn Sewer and 2000 Tons for Boston Candy Factory**

A Brooklyn sewer requiring 3400 tons of concrete reinforcing bars and a Boston candy factory taking 2000 tons are the week's largest awards of reinforcing steel. Other awards bring the week's total to more than 9000 tons. Public work at Stickney, Ill., will require 3750 tons. Bids are now being taken on this job. Awards follow:

BOSTON, 2000 tons, candy factory, to Calman Brothers.
JAMAICA, L. I., 1500 tons, sewer, from Mecaro Construction Co., general contractor, to Concrete Steel Co.
BROOKLYN, 3400 tons, Coney Island sewer, from COROZZA Construction Co., general contractor, to Concrete Steel Co.
NEW YORK, 270 tons, Sentina Warehouse, Bronx, to McClintic-Marshall Co.
ELIZABETHPORT, N. J., 400 tons, Staten Island bridge work, from Triest Contracting Co., general contractor, to Concrete Steel Co.
HALEDON, N. J., 200 tons, Passaic County Sanitarium, to Joseph T. Ryerson & Son, Inc.
EVANSTON, ILL., 300 tons, garage, to Concrete Engineering Co.
CHICAGO, 100 tons of rail steel, addition to the Illinois Central Hospital, to Calumet Steel Co.
CHICAGO, 160 tons, public school, to Kalman Steel Co.
CHICAGO, 125 tons, apartment building at 6137 Kenwood Avenue, to Kalman Steel Co.
LA SALLE, ILL., 220 tons, high school, to Joseph T. Ryerson & Son.
RICHMOND, CAL., 400 tons, buildings for Standard Sanitary Mfg. Co., to unnamed San Francisco jobber.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

BOSTON, 600 tons, bridge at Cambridge, Mass.
CINCINNATI, 350 tons, building for John Van Range Co.
STICKNEY, ILL., 3750 tons, for the Sanitary District.
CHICAGO, 215 tons, building at 180 West Washington Street; Hyland & Course, architects.
SAN FRANCISCO, 100 tons, for the Carter Estate.
LOS ANGELES, 123 tons, two bridges for Los Angeles County.

A McMyler Interstate crane mounted on the roof of the boiler house of the Miami Paper Co., West Carrollton, Ohio, is used for unloading coal from railroad cars, lifting the coal to a shaft at the top of the building, the coal thence reaching the boiler house interior.

The growth of the Morse Twist Drill & Machine Co., New Bedford, Mass., from a small machine shop in 1867 to a factory employing 1000 men in 1926 is the subject of an article in a recent issue of the *Exporters and Importers Journal*.

RAILROAD EQUIPMENT**Orders for Locomotives Feature Market—Louisville & Nashville Inquires for Cars**

The Baldwin Locomotive Works has received orders for 77 locomotives, 50 from the Seaboard Air Line, 22 from the Santa Fe and five from the Belt Line of Chicago. The inquiry of the Louisville & Nashville for 1500 freight and 28 passenger cars is out for bids. Items of the week follow:

The Seaboard Air Line has ordered 50 Mikado type locomotives from the Baldwin Locomotive Works.

The Pennsylvania Railroad has ordered 93 motor-driven coaches and 4 electric locomotives from the Westinghouse Electric & Mfg. Co.

The Atchison, Topeka & Santa Fe has ordered 22 locomotives from the Baldwin Locomotive Works.

The Louisville & Nashville has issued its inquiry for 1000 steel gondolas, 250 automobile cars, 250 flat cars and 28 passenger cars.

The Pennsylvania Railroad has placed orders for 1000 tons of fabricated car repair parts with car builders. Orders for 3000 tons were placed by the same road two or three weeks ago.

The Belt Railway of Chicago has placed 5 switching locomotives with the Baldwin Locomotive Works.

The Nickel Plate is in the market for 4 Pacific type locomotives.

The Chicago & North Western placed 4 dining cars with the Pullman Car & Mfg. Corporation.

Scrap Prices Decline at Detroit

DETROIT, Oct. 5.—With continued heavy production in the automobile industry, the volume of waste material coming out has had a depressing effect on the market. Outside of the recent heavy purchase by the Bethlehem company for its Lackawanna plant, there have been no sales of large tonnage, and most of the Ohio mills have been holding up delivery, with the result that blast furnace materials have registered declines.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	\$12.50 to \$13.00
Borings and short turnings	9.00 to 9.50
Long turnings	8.75 to 9.25
No. 1 machinery cast	17.00 to 18.00
Automobile cast	20.50 to 21.50
Hydraulic compressed	12.00 to 12.50
Stove plate	13.50 to 14.50
No. 1 busheling	11.00 to 11.50
Sheet clippings	8.00 to 8.50
Flashings	10.75 to 11.25

PERSONAL

John C. Ruf, for a number of years with I. B. Williams & Sons, Dover, N. H., has been elected president of the Johnson Belting Co., 423 East Fifty-sixth Street, New York. Mr. Ruf has spent the greater part of his business life in the mill supply field, and is the first man to have been elected president of the American Supply and Machinery Manufacturers' Association for a second time.



JOHN C. RUF

Hiram N. Cudworth, for more than twenty years in the sales department of the Norton Co., Worcester, Mass., and recently district manager for its machine division in Chicago, has retired from active service, but will retain his association

with the company in a consulting capacity. His place will be filled by Oscar E. Nordstrom, formerly Cleveland district manager for the company's machine division. M. E. Mattson, until Oct. 1 a sales representative in the Chicago district, has been made Cleveland district manager. C. H. Hill, who heretofore has represented the Norton Co. in Indianapolis, has removed his headquarters to the Chicago office, but will continue to call on his customers in Indiana, Kentucky and Missouri.

E. J. Kulas, president Otis Steel Co., Cleveland, sailed for Europe the first of the month for a six to eight weeks' vacation.

T. H. Kane, vice-president and general manager Truscon Steel Co., Youngstown, Ohio, has resigned to accept the presidency of the Berger Mfg. Co., Canton, Ohio, steel fabricating subsidiary of the Central Alloy Steel Corporation, Canton. Mr. Kane had been with the Truscon company since 1908.

Hale J. Denny has been added to the sales force in the Chicago territory of the Bridgeport Brass Co., Bridgeport, Conn. He will work under the direction of R. M. Hubler, the company's Chicago district manager. Mr. Denny has been identified with the plumbing specialty business in the vicinity of Chicago for the last five years.

Feodore F. Foss, assistant to the president of the Wheeling Steel Corporation, Wheeling, W. Va., is back home after a six months' trip to western Europe, where he studied the iron and steel industry of France, Belgium, Luxemburg, Germany, Czecho-Slovakia and England.

R. C. Brower, for the past four years connected with both the automotive and industrial machinery sales division of the Timken Roller Bearing Co., Canton, Ohio, has been appointed general manager of the Timken Roller Bearing Service & Sales Co., with headquarters at Canton. He has been connected with the bearing industry since 1913, having been eastern and central district manager of the Bearing Service Co., which was absorbed by the Timken sales and service company.

Howard Coonley, president Walworth Mfg. Co., Boston, has been appointed chairman of the Massachusetts Permanent Committee on Safety Activity.

Francis B. Shuster, New England representative of Frank Samuel & Co., who has been ill for seven months, is now again at his office.

Einar Troili, vice-president Udderholm Iron & Steel Co., Varmland, Sweden, was a recent visitor in Worcester, Mass. He inspected the North and South Works, American Steel & Wire Co. A score of years ago he was a draftsman at the Morgan Construction Co., Worcester, and also studied methods at the American Steel & Wire Co. plant. Mr. Troili will remain in this country until the latter part of this month.

Thomas T. Richards has resigned as vice-president and general sales manager of the Wagner Electric Corporation, St. Louis, to become sales manager of the Arthur B. Shepard Corporation, New York, structural steel fabricator. He will retain his financial interest in the Wagner corporation, with which he has been connected for 21 years. Before leaving St. Louis he was the guest of honor at a dinner given at the Forest Park Hotel, St. Louis, when executives and district managers of the company presented him with a watch and chain.

Hans Luthi has been appointed general superintendent of the Kenosha division of the Nash Motors Co., succeeding John Bjorn, who resigned Aug. 15 to retire. Mr. Luthi entered the employ of the Thomas B. Jeffery Co., Kenosha, in 1906 as an assistant foreman, and rose in the ranks until he was promoted to assistant general superintendent of the Nash Motors Co., which took over the Jeffery works in 1916.

Frank Turrehini, technical director and head of Société Genevoise d'Instruments de Physique, Geneva, Switzerland, is spending a few weeks in the United States.

Gilbert H. Unruh has been appointed Baltimore representative of the Link-Belt Co., Chicago, and is at present located at 618 Regester Avenue, Stonleigh, Baltimore. He has been connected with the Link-Belt Co. for a number of years.

Frank C. Eaton has been elected president of the Pittsburgh Tool Steel Wire Co., Monaca, Pa., to succeed the late Godfrey Stengel, Jr. George H. Stengel has been elected vice-president and Ralph H. Pauley secretary and treasurer. Mr. Eaton was formerly vice-president and Mr. Pauley secretary. Dr. Alfred Stengel of Philadelphia has been added to the company's board of directors.

Harvey M. Crane, technical assistant to the president General Motors Corporation, Detroit, and William J. Davidson, assistant secretary, headed a group of engineers of that company who sailed for Europe Oct. 1, for a month's tour of Great Britain and the Continent to inspect new designs in their field. Included in the party were Enos A. De Waters, chief engineer Buick Motor Car Co.; Ernest W. Seaholm, chief engineer Cadillac Motor Car Co.; Ormond E. Hunt, chief engineer Chevrolet Motor Car Co.; Benjamin H. Anibel, chief engineer Oakland Motor Car Co., and Herbert C. M. Stevens, chief engineer Olds Motor Works.

R. H. Ismon, secretary and treasurer and a director of the American Can Co., New York, has tendered his resignation, effective Nov. 1. He will be succeeded as secretary and treasurer by R. A. Burger. C. E. Green has been elected controller and selected to succeed Mr. Ismon on the board of directors.

W. E. Worme, for six years assistant to district manager of sales Jones & Laughlin Steel Corporation, has joined the sales department of the Stieglitz-Treiber Co., Inc., 18 East Forty-first Street, New York, dealer in tin plate and sheets, as assistant to the vice-president.

W. H. Fitch has resigned as manager of the metallurgical department Fuller-Lehigh Co., Fullerton, Pa.

W. L. Batt, president SKF Industries, Inc., New York, has been decorated by the King of Sweden with the knighthood of the Order of Vasa, first class. Instituted in 1772 by King Gustave III, the Order of Vasa is regarded as the Swedish counterpart of the French Legion of Honor.

Arthur L. Young, of Industrial Relations Counselors, Inc., 165 Broadway, New York, sailed for Europe this week.

Martin J. Conway, formerly fuel engineer for the Wheeling Steel Corporation, Wheeling, W. Va., has accepted a similar position with the Lukens Steel Co., Coatesville, Pa.

George M. Bowen, formerly grinding wheel salesman in Detroit for the Norton Co., Worcester, Mass., has resigned. He will be succeeded by Karl E. Herrick, several years ago in the wheel sales division of the company and assistant sales manager of its refractories division.

OBITUARY

FRANK W. McLEAN, former vice-president Pittsburgh Rivet Co., Pittsburgh, and for many years active in the hardware business, died at his home in Mt. Lebanon, Pittsburgh, Sept. 29. He was born in Pittsburgh 76 years ago and following his graduation from Western University of Pennsylvania became associated with Fanestock & Co., a Pittsburgh hardware firm. Later he went into the business for himself and still later went with the Bindley Hardware Co., from which he went to the Pittsburgh Rivet Co. He retired from active business about nine years ago.

NICHOLAS B. TRIST, special wheel engineer Carnegie Steel Co., Pittsburgh, died at his home in Sewickley, Pa., Sept. 29. He was born at Savannah, Ga., in 1862. He entered the service of the Pennsylvania Railroad as an apprentice in the Altoona shops and served with this road in various capacities for about 23 years. Through Charles T. Schoen he became connected with the Schoen Steel Wheel Co., when that firm started the manufacture of solid wrought steel wheels, and continued with the Carnegie Steel Co. when it took over the Schoen company in 1908.

ALEXANDER E. KEITH, consulting engineer for the Automatic Electric Co., Chicago, died Sept. 27 at the age of 66 years. In 1893 he came to Chicago from Baltimore and started to work with the Strowger Automatic Exchange. He was the inventor of the Keith line switch.

CARL G. JANSON, president Janson Iron Works, Oakland, Cal., died at his home in Oakland, Sept. 29, aged 70 years. He was a native of Germany and came to the United States 37 years ago. He founded the Janson Iron Works in 1906.

ARTHUR HOLLAND, a retired iron and steel merchant, died Oct. 1, at his home in Concord, Mass. He was born in Boston, Sept. 22, 1850, and was graduated from Harvard University in 1872. He then became associated with Naylor & Co., New York, dealer in iron and steel, and moved to Pittsburgh with the firm in 1888. During the following year he was made a member of the firm. In 1894 he resigned to establish Holland & Co., Pittsburgh. Four years later he went to London as foreign representative of the United States Steel Corporation, and in 1901 became president of the United Railways, San Francisco. About 1907 he reorganized the York Street Railways in Pennsylvania, and later, for a short period, was president Bangor & Aroostook Railroad, in Maine. Since 1916 he had resided in Concord, but spent considerable time abroad.

LOUIS SOMMERHAUSER, president and manager of the Spuck Iron & Foundry Co., St. Louis, died in that city Sept. 28. He was born in St. Louis 71 years ago, and had been connected with the Spuck organization for more than 30 years. At its incorporation in 1902 he was made vice-president, becoming president in 1919.

ROBERT J. JOHNSON, former vice-president of Henry Disston & Sons, Inc., Philadelphia, died Sept. 27 at his summer home in Augusta, Ga. He retired from active business seven years ago.

WILLIAM J. WATSON, organizer of the Buda Foundry & Mfg. Co., the Hewitt Mfg. Co. and the Fort Madison Iron Works Co., later serving as the president of each concern, died Sept. 21, aged 83 years. Mr. Watson was a director of the First National Bank, the Security Bank of Chicago and the Second Security Bank of Chicago. Upon leaving Philadelphia Mr. Watson went to St. Louis in 1870, moving to Chicago in 1873 as representative of the Middleton Car Spring Co.

R. S. RODGERS, secretary American Seeding Machine Co., Springfield, Ohio, died at the Union Memorial Hospital, Baltimore, Oct. 3, following an operation.

JOSEPH WOLF, president Cincinnati Electrical Tool Co., Cincinnati, died Sept. 24. He had been head of the company for the past year, having previously served many years as vice-president.

Canadian Output of Pig Iron and Steel Declines

TORONTO, ONT., Oct. 5.—Production of pig iron in Canada during the month of August totaled 58,780 gross tons, which was 13 per cent under the 67,232 tons produced in July, but more than double the 26,513 tons produced in August, 1925. The production of pig iron by grades shows basic iron at 29,882 gross tons in August, as compared with 40,260 tons in July; foundry iron at 13,454 tons in August, compared with 22,490 tons in July; and malleable iron at 15,444 tons in August, which marked a sharp increase from the 4482 tons made in July.

For the eight months ended with August the production of pig iron in Canada amounted to 496,876 gross tons, an increase of 47 per cent over the 338,351 tons reported for the corresponding period in 1925.

Reflecting the lower output of pig iron during August the production of steel ingots and castings in Canada fell to 45,674 tons in the month under review, or 30 per cent below the 64,847 tons made in July. The production of ingots and castings for the eight months of the year ended with August amounted to 541,705 tons, which is 15 per cent over the 471,175 tons reported for the corresponding period last year.

Appointed Secretary of Western Sheet and Tin Plate Association

YOUNGSTOWN, Oct. 5.—Manufacturers today announced the appointment of Elias Jenkins as secretary of the Western Sheet and Tin Plate Manufacturers Association. Mr. Jenkins will maintain offices in the Mahoning Bank building, Youngstown, where the bi-monthly settlements in the sheet and tinplate division will be conducted. For 35 years he was employed in Valley steel mills and for 10 years served as trustee of the Amalgamated Association of Iron, Steel and Tin Workers. He succeeds to the position made vacant by the death in the spring of James H. Nutt, formerly secretary as well of the Western Bar Iron Association, a position now held by S. C. Leonard, Detroit.

NEW TRADE PUBLICATIONS

Skip-Lift.—R. H. Beaumont Co., Philadelphia. Bulletin 79 of 28 pages illustrates and describes the skip-lift method of handling bulk materials. Many examples of use are shown and diagrams indicate various methods of application. Details of the equipment are included.

Case-Hardening Steel.—Jones & Laughlin Steel Corporation, Pittsburgh. Folder of eight pages devoted to a new type of case-hardening steel, known as Jalcase. This is furnished in hot-rolled or cold-finished bars and is reported to have exceptionally good machinability combined with the hard wear resisting surface. The makers recommend it for forging and cold heading.

Recording Voltmeters.—Bristol Co., Waterbury, Conn. Catalog 1502 describes voltmeters designed for general commercial use, in both the round and strip chart models. Many details are shown, together with samples of various types of charts.

Porcelain Enameling.—Ferro Enameling Co., Cleveland. "Men and Methods," a handsomely printed and illustrated booklet, dealing largely with the progress of the company's research department and its aid in the production of enameled products. Photographs and short biographical sketches of the men employed in a technical capacity by the company are included.

Circuit Breakers.—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Revised leaflets L 3549-B, L 20135-A and L 20011-A, covering type CA carbon circuit breakers, types CL and CN carbon circuit breakers and types F-11 and F-22 oil circuit breakers. Application, construction and operation of the various types are discussed.

Valves.—Homestead Valve Mfg. Co., Homestead, Pa. "Valve Economy," a small booklet of 24 pages providing information about the plug cock and other types of valves. Illustrations and diagrams are furnished showing the installation of different kinds of valves with particulars on methods by which economy may be achieved.

Industrial Buildings.—Standard Erecting Corporation, 110 East Forty-second Street, New York. Illustrated catalog covering the company's series A standardized buildings, particularly adaptable to foundry requirements.

Electrical Instruments.—Roller-Smith Co., 233 Broadway, New York. Bulletin No. 110, giving full descriptions and specifications of HTD direct current ammeters, voltmeters and volt-ammeters. Bulletin No. 150, dealing with HTA alternating current ammeters, voltmeters and single phase wattmeters.

Molding Materials.—Illinois Clay Products Co., Joliet, Ill. "Rebonding Foundry Sand," a small booklet describing the use of fire clay to renew the bond of molding sand in foundry operations.

Air Heaters and Coolers.—Aerofin Corporation, 750 Frelinghuysen Avenue, Newark, N. J. Brief folder describing the company's product for the heating or cooling of air in which an outside casing protects the core from expansion strains and forms the duct for ventilating air.

Electric Lamps.—Westinghouse Lamp Co., 150 Broadway, New York. Catalog of 48 pages containing descriptions and latest price schedules of Westinghouse Mazda lamps. Both standard and intermediate schedules are given and also full particulars on overall lengths, extra charges, discounts and freight allowances.

Fans and Blowers.—Buffalo Forge Co., 490 Broadway, Buffalo. Leaflet providing illustrations, specifications and a brief description of the company's type FB variable and constant speed electric blowers. Catalog No. 475, describing baby conoidal fans with tables of ratings and dimensions and full constructional details.

Steel Lockers.—Durabilt Steel Locker Co., 432 Arnold Avenue, Aurora, Ill. Two leaflets showing illustrations of the company's steel lockers in various school buildings throughout the country.

Stokers.—Combustion Engineering Corporation, 43 Broad Street, New York. Catalog C-4 describing the company's Cox traveling grate stoker for use in the burning of anthracite coal and coke breeze. Diagrams, illustrations and specifications are included.

Machine Tools.—Joseph T. Ryerson & Son, Inc., Chicago. Bulletin 11191, describing the quadruple combination punch and shear; bulletin 4051, dealing with

horizontal drilling and boring machines; bulletin 9000, describing the No. 0 high speed friction saw, and bulletin 1301 devoted to 17-in., 21-in., 25-in. and 30-in. Ryerson-Conradson geared head engine lathes. Specifications on all the machines are included.

Engine Indicators.—Bacharach Industrial Instrument Co., 7000 Bennett Street, Pittsburgh. Bulletin 261, dealing with the company's indicators of the Malhak type, particularly designed for use on oil engines. Special emphasis is given to the Malhak high speed indicator suitable for speeds up to 2400 r.p.m., on which the American patent has recently been granted.

Ball Bearings.—Standard Steel & Bearings, Inc., Plainville, Conn. "Molybdenum Means More-Life-In-Em—Why?" is the title of a booklet telling the story of the development and use of molybdenum steel for bearing purposes.

Alloy Steels.—International Nickel Co., New York. Bulletin No. 6, "Alloy Steel Reduces Die Block Costs," is a four page bulletin, perforated for binding, in which are tabulated the comparative costs of producing commercial forgings with carbon steel and nickel steel die blocks and the savings effected by the use of the latter material. Figures submitted are based on production records of a large job forging plant producing principally automotive forgings.

Carburizing Compound.—Char Products Co., 1616 Merchants Bank Building, Indianapolis. Bulletin dealing with the company's carburizing compound, a case hardening material said to have a low dusting loss, low shrinkage and continuously uniform activity for the carburizing of steel.

Metal Working Tools.—Cleveland Punch & Shear Works Co., Cleveland. Illustrated folder giving brief description of the company's power presses and other machinery.

Electric Motors.—Century Electric Co., St. Louis. Bulletins describing the company's repulsion start induction single phase motors with capacities from $\frac{1}{4}$ to 40 hp. and its squirrel cage induction two and three phase motors ranging in capacity from $\frac{1}{4}$ to 50 hp. Full specifications and particulars are given with new prices, discounts, etc.

Electric Drop Pit Tables.—Whiting Corporation, Harvey, Ill. Catalog 177, describing the company's electric drop pit table for use in locomotive and car shops. Illustrations of installations are given and also blueprints of the various working parts.

Mechanical Stokers.—John Harrington Co., Harvey, Ill. Catalog 100, describing the company's "King Coal" automatic mechanical stoker designed especially for small boilers. Illustrations and diagrams are furnished and also details of the company's engineering service for all users.

Air Compressors.—Franklin Air Compressor Works, Norristown, Pa. Illustrated booklet describing the company's Super-Single-Stage air compressors of the motor-driven, gasoline-driven and gear-driven types, both automatic and non-automatic and also various accessories manufactured by it.

Electrical Appliances.—Crouse-Hinds Co., Syracuse, N. Y. Advance sheets providing illustrations, descriptions and specifications of the various sorts of electrical appliances manufactured by the company. Condulets, adapters, hangers, rosettes, covers, fixture hangers, holders, globes and locomotive handrail condulets are included.

Concrete Admixtures.—Celite Products Co., 1320 South Hope Street, Los Angeles. Bulletin 325, providing directions for the use of Celite with considerable technical data on the effect of siliceous admixtures in concrete mixes and the resulting concrete. A summary of laboratory tests on the compressive strength of plain concrete and concrete in which Celite is used is included.

Inspected Appliances.—Underwriters' Laboratories, National Board of Fire Underwriters, 207 East Ohio Street, Chicago. Semi-annual list of gas, oil and miscellaneous appliances, liquids and materials which have been inspected as fire hazards and received the board's stamp of approval. The appliances are arranged alphabetically and accompanied by a list of the names and addresses of the companies which make them.

Leather Belting.—Cleveland Oak Belting Co., Cleveland. 36-page booklet describing the various types of belting manufactured by the company. Various accessory products are also included. A number of pages are devoted to engineering data on the strength and proper use of leather belting.

Where Steel Exports Went in Eight Months

Canada Is Largest Market, Taking 562,359 Tons—Japan Is Second with 167,552 Tons
—Mexico and Cuba Retain Third and Fourth Ranking—
Exports to Kwangtung Jump

Exports from United States, by Countries of Destination

(In Gross Tons)

	Steel Plates				Galvanized Sheets				Black Steel Sheets			
	August		Eight Months Ended August		August		Eight Months Ended August		August		Eight Months Ended August	
	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Total	12,304	9,153	84,100	56,274	5,874	6,368	72,954	83,834	6,429	8,256	104,961	47,888
Canada	12,183	8,151	81,792	53,503	2,409	1,939	32,907	17,929	5,333	3,940	43,498	28,843
*Japan	95	494	432	879	559	564	4,569	2,629	989	3,666	60,409	16,854
Cuba	26	30	1,145	862	739	1,358	6,064	7,173	107	297	399	868
Philippine Islands	2	2	151	151	1,570	677	16,083	12,066	20	20	127	127
Mexico	476	476	731	879	597	938	6,358	4,773	333	333	655	690
Argentina	29	29	29	29	29	29	6,973	33,657	1,493	1,493	1,493	1,493
Chile	863	863	863	863	863	863	4,114	4,114	4,114	4,114	4,114	4,114
Colombia .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Central America .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

	Steel Rails				Barbed Wire				Plain and Galvanized Wire			
	August		Eight Months Ended August		August		Eight Months Ended August		August		Eight Months Ended August	
	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Total	10,835	13,334	77,178	67,033	2,682	3,302	28,770	35,593	1,445	2,373	17,745	17,700
Canada	3,413	2,797	18,629	14,275	255	44	4,065	1,327	608	1,149	8,933	10,170
*Japan	3,903	577	20,562	4,532	.....	.....	.....	.....	4	169	881	602
Cuba	1,101	5,478	9,868	29,923	183	362	1,849	3,381	108	163	927	1,698
Philippine Islands .....	.....	.....	4,224	2,215	411	.....	4,270	773	.....	.....	.....	.....
Mexico	1,448	87	6,924	3,978	413	192	4,334	4,115	323	623	3,666	2,893
Argentina .....	.....	.....	.....	.....	61	986	1,754	6,565	223	61	2,274	548
Chile	119	384	8,602	4,734	.....	.....	.....	.....	.....	1	.....	104
Colombia	20	730	4,935	1,621	471	556	3,684	3,420	.....	.....	.....	.....
Brazil	831	3,227	3,734	5,755	409	884	5,637	11,501	179	217	1,064	1,685
Australia .....	.....	.....	.....	.....	62	52	743	765	.....	.....	.....	.....
British S. Africa .....	.....	.....	.....	.....	417	247	2,434	3,746	.....	.....	.....	.....

	Tin Plate				Plain Heavy Structural Steel				Steel Bars			
	August		Eight Months Ended August		August		Eight Months Ended August		August		Eight Months Ended August	
	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Total	11,708	8,961	97,709	83,339	18,080	10,417	96,249	46,690	9,046	6,531	82,047	45,063
Canada	5,118	2,965	29,233	23,386	13,325	9,081	81,272	39,135	6,698	5,551	55,578	40,091
*Japan	705	3,000	28,117	22,162	511	23	3,849	973	167	73	1,700	875
Cuba	122	206	1,470	3,206	972	1,005	5,742	4,981	440	927	2,650	4,097
Mexico	1,170	518	5,238	4,046	.....	.....	.....	.....	70	.....	2,768	.....
Argentina	1,170	466	6,839	4,987	.....	.....	.....	.....	164	.....	297	.....
Chile	662	402	4,088	3,573	3,272	308	5,386	1,601	75	.....	2,014	.....
China	1,505	1,313	12,948	8,366	.....	.....	.....	.....	.....	.....	.....	.....
British India	1,256	.....	.....	8,058	.....	.....	.....	.....	.....	.....	.....	.....
Hong Kong .....	.....	.....	.....	636	.....	.....	.....	.....	.....	.....	.....	.....
Italy .....	.....	91	9,726	4,919	.....	.....	.....	.....	.....	.....	.....	.....
United Kingdom .....	.....	.....	.....	.....	.....	.....	.....	.....	1,432	.....	17,040	.....

*Including Chosen (Corea).

Destination of Iron and Steel Products Exported From the United States

(In Gross Tons)

Country of Destination	August, 1926	January through August		Country of Destination	August, 1926	January through August	
		1926	1925			1926	1925
North and Central America and the West Indies	98,904	744,450	616,929	Rumania	188	2,245	808
Canada and Newfoundland	78,479	562,359	385,891	Russia .....	.....	2,807	615
Cuba	7,026	59,113	101,295	Turkey	71	2,303	1,133
Mexico	8,808	68,873	77,145	United Kingdom	5,904	37,955	35,068
Guatemala	532	8,501	4,821	Other Europe	3,732	15,260	22,040
Salvador	405	11,885	12,631	Far East and Oceania	35,806	325,891	199,526
Panama	668	5,555	8,112	Australia	2,033	15,860	14,705
British West Indies	539	5,948	5,538	British Malaya	1,096	6,229	3,686
Other West Indies	1,554	11,283	11,522	China	2,092	23,659	41,745
Other Central America	893	10,933	9,974	Dutch East Indies	3,220	23,085	14,502
South America	24,868	223,078	231,573	India	4,949	24,887	10,464
Argentina	3,186	38,141	70,952	Japan and Chosen	11,207	167,552	76,058
Brazil	4,343	28,793	34,329	Kwangtung	6,134	13,733	1,557
Chile	6,423	43,225	33,849	Philippine Islands	3,287	42,342	31,040
Colombia	2,212	39,192	53,248	Other Asia and Far Eastern markets	1,788	8,544	5,769
Peru	3,373	23,208	10,061	Africa	1,912	11,484	22,065
Venezuela	3,896	42,371	21,563	British South Africa	865	5,661	18,928
Other South America	1,435	8,148	7,571	Egypt	696	3,933	2,157
Europe	10,098	90,015	100,528	Portuguese East Africa	325	1,586	600
France	55	7,110	3,838	Other Africa	26	274	380
Italy	148	22,335	37,026				

U. S. Leads in Exports to Japan

This Country Source of Largest Imports of Iron and Steel Into Nippon in 1922 and 1924—Ranking Is Third for 1923

WASHINGTON, Sept. 28.—Leading all other countries, the United States was the source of the heaviest imports of iron and steel products into Japan in 1924, supplying 407,700 gross tons out of a total of 1,628,844 tons, which set a record for incoming shipments into Japan. Great Britain ranked second as the source of Japanese imports of iron and steel in 1924 with 344,708 tons, while Germany was third with 217,692 tons.

Japanese Imports Largest in 1924

These figures are shown in a detailed compilation just made by the iron and steel division, Department of Commerce, which includes statistics covering the years 1922, 1923 and 1924, and are the latest available. Previously, the division compiled figures showing imports of iron and steel into Japan for the years 1912-13 and 1918-21. In the present table it was not possible to show imports from Yokohama during July, 1923, owing to the earthquake occurring in September of that year, when many of the records were destroyed. The movement that month from Yokohama, however, probably was relatively small, so that absence of the figures affects the tables but little.

Next to 1924, imports of iron and steel into Japan were greatest in 1922, totaling 1,460,742 tons. In that year also the United States ranked first as the source of shipment, providing 366,893 tons. Germany was second, with a total of 131,421 tons. In 1923, when imports into Japan of iron and steel totaled 1,186,619 tons, Yokohama led as the source of shipments, with 294,667 tons, while Great Britain was second with 197,480 tons and the United States third with 179,919 tons.

Heaviest Imports in Pig Iron

In all three years, 1924, 1923 and 1922, the tonnage of pig iron was the heaviest of any commodity imported. Of the 438,437 tons imported in 1924, China, leading all other countries as the source, supplied 163,907 tons, while India was second with 158,708 tons. In 1923 when Japanese imports of pig iron totaled 343,290 tons, India was the leading source of shipments, providing 132,825 tons, while China came second

with 97,846 tons. In 1922 pig-iron imports into Japan amounted to 325,373 tons, China being the source of greatest shipments with 128,248 tons, while India was second with 87,673 tons.

Plates and Black Sheets Second in Tonnage Imported

Plates and black sheets, the bulk of the combined tonnage consisting of the latter, ranked second among the commodities imported for each of the three years, amounting to 388,923 tons in 1924; 239,696 tons in 1923 and 387,651 tons in 1922. Great Britain led as the source of these imports in 1924 and 1923, during which years the United States was second, while in 1922, Yokohama came first, and the United States second. Imports in 1924 from Great Britain amounted to 212,812 tons as against 155,352 tons for the United States. In 1923 imports of these products from Great Britain aggregated 127,970 tons, compared with only 28,500 tons for the United States. In 1922 imports from Yokohama were 178,997 tons, while the United States supplied 147,283 tons, and Great Britain 42,798 tons.

Bars, rods, shapes, etc., stood third among the items imported for all three years, with Belgium leading as the source of this class of shipments. The United States led as the source of tin-plate imports into Japan in 1924, providing 44,134 tons of the 70,860 tons imported, with Great Britain second, supplying 26,677 tons. In 1923 imports of tin plate into Japan amounted to 54,903 tons, not taking into account missing figures for July imports from Yokohama. Great Britain supplied 20,754 tons, and the United States, ranking third, furnished 15,321 tons. Yokohama, with July figures missing, is credited with 18,790 tons. The United States was the principal source of imports of rails both in 1924 and 1923, supplying 58,542 tons in the former year out of a total of 101,651 tons, while Germany was second with 23,611 tons. In 1923 the United States supplied 51,257 tons of rails out of a total of 117,876 tons, and Yokohama was second with 46,180 tons. Yokohama led in 1922 with 82,512 tons of the 170,774 tons of rails imported, and the United States was second with 67,413 tons.

Imports of Iron and Steel Products into Japan in 1922, 1923 and 1924

(In Gross Tons by Calendar Years)				Ingots, Blooms, Billets, Slabs				Wire Rods			
Pig Iron											
	1924	1923	1922		1924	1923	1922		1924	1923	1922
China	163,907	97,846	128,248	China	4,050	....	....	China	....	193	....
Kwangtung	93,882	59,710	50,594	United Kingdom	734	462	852	United Kingdom	6,806	6,226	2,002
India	158,708	132,825	87,673	Germany	669	1	....	France	1,458	....	305
United Kingdom	7,746	6,915	5,496	Sweden	830	185	....	Germany	29,064	12,283	17,938
France	....	....	8,024	United States	67	4	166	Belgium	6,417	8,475	1,699
Germany	201	....	4,471	Yokohama*	....	2,858	1,211	Italy	502	....	....
Belgium	....	909	1,822	Total	6,350	3,510‡	2,229	Netherlands	778	....	....
Sweden	13,962	657	4,082					Sweden	2,395	696	432
United States	31	25	1,175	Bars, Rods, Shapes, Etc.				United States	38,017	17,726	15,928
Australia	....	....	103					Canada	2,104	50	....
Yokohama*	....	45,003	38,785					Yokohama*	....	8,250	15,345
Total	438,437	343,290†	325,373					Total	87,541	53,899†	53,649
Ferromanganese								Plates and Sheets			
	1924	1923	1922		1924	1923	1922		1924	1923	1922
China	....	....	101	China	....	3,919	4,885	China	....	1,816	....
India	343	....	....	Kwangtung	1,054	114	27	Kwangtung	55	473	....
United Kingdom	2,512	303	855	Dutch East Indies	237	....	....	United Kingdom	212,812	127,970	42,798
France	100	....	....	United Kingdom	41,028	22,671	12,939	France	326	....	....
Germany	....	....	109	France	5,630	647	....	Germany	11,255	8,927	15,116
Sweden	....	61	65	Germany	91,652	43,607	53,991	Belgium	8,671	8,686	3,401
United States	201	....	....	Belgium	134,148	63,209	40,651	Netherlands	48	....	....
Yokohama*	....	186	17	Italy	763	....	....	Sweden	288	9	47
Total	3,156	550‡	1,147	Austria	234	51	35	United States	155,352	28,500	147,283
Ferrocchrome, Etc.				Netherlands	4,778	1,202	958	Other countries	116	....	....
	1924	1923	1922	Sweden	3,705	714	1,327	Yokohama*	....	63,315	178,997
United Kingdom	2	2	....	Denmark	1,355	....	....	Total	388,923	239,696	387,651
France	1	....	....	United States	16,923	7,383	35,125	Galvanized Corrugated Sheets			
Germany	38	8	....	Other countries	195	....	....		1924	1923	1922
Sweden	73	4	....	Yokohama*	....	54,225	95,025	Kwangtung	....	2	....
Norway	3	....	....	Total	301,762	197,742	244,966	United Kingdom	9,753	2,502	1,530
Yokohama*	....	1	7					Germany	....	7	....
Total	117	15‡	7					United States	3,698	774	36
				Checkered Plate				Yokohama*	....	52	3,418
	1924	1923	1922		1924	1923	1922	Total <td>13,451</td> <td>3,337‡</td> <td>4,974</td>	13,451	3,337‡	4,974
United Kingdom	148	....	69	United Kingdom	148	....	69				
France	16	....	....	France	16	....	....		
Germany	598	789	1,111	Germany	598	789	1,111				
Belgium	164	138	70	Belgium	164	138	70				
United States	....	....	32	United States	....	....	32				
Yokohama*	....	173	261	Yokohama*	....	173	261				
Total	926	1,100†	1,543	Total	926	1,100†	1,543				

Galvanized Plain Sheets			
	1924	1923	1922
Kwangtung	130	130	130
United Kingdom..	9,875	2,540	1,706
Germany	61	25	....
Belgium	304	....	....
United States....	7,017	874	946
Yokohama* .....	....	432	5,142
Total	16,757	4,001†	7,794

Tin Plate			
	1924	1923	1922
Kwangtung .....	....	....	16
United Kingdom..	26,677	20,754	12,331
Germany	49	....	....
Sweden .....	....	38	....
United States....	44,134	15,321	36,125
Yokohama* .....	....	18,790	8,530
Total	70,860	54,903†	57,002

Round Iron and Steel Wire			
	1924	1923	1922
United Kingdom..	299	154	160
Germany	1,018	403	1,046
Italy	3	....	....
Sweden	121	3	132
United States....	586	834	926
Other countries..	7	....	....
Yokohama* .....	....	979	1,542
Total	2,034	2,373†	3,806

Galvanized Wire			
	1924	1923	1922
Kwangtung .....	....	18	....
United Kingdom..	2,627	749	712
Germany	26,128	9,918	12,968
Belgium	196	9	48
Netherlands	604	....	....
Sweden .....	....	....	51
Denmark .....	....	5	....
United States....	7,953	13,021	16,842
Yokohama* .....	....	6,394	20,320
Total	37,508	30,114†	50,941

Strip Steel			
	1924	1923	1922
United Kingdom..	833	192	78
France	44	....	....
Germany	119	....	32
Italy	9	....	....
Sweden	468	44	85
United States....	385	164	260
Yokohama* .....	....	388	803
Total	1,858	788†	1,258

Hoops and Bands			
	1924	1923	1922
China	247	....	....
United Kingdom..	4,303	3,124	1,324
Germany	3,833	820	1,454
Belgium	1,162	214	75
Netherlands	30	....	....
United States....	685	604	936
Other countries..	137	....	....
Yokohama* .....	....	2,798	4,311
Total	10,397	7,560†	8,100

Wire Rope and Strand			
	1924	1923	1922
United Kingdom..	427	241	93
France .....	....	3	2
Germany	792	133	151
Switzerland	6	....	....
Sweden	1	87	31
United States....	170	62	467
Canada .....	....	....	17
Yokohama* .....	....	352	515
Total	1,396	878†	1,276

Pipe Fittings			
	1924	1923	1922
Kwangtung .....	....	5	10
United Kingdom..	68	104	86
Germany	48	....	....
Switzerland	4	4	2
Sweden	10	14	....
United States....	306	275	103
Yokohama* .....	....	340	221
Total	436	742†	422

Seamless or Drawn Tubes			
	1924	1923	1922
United Kingdom..	30	114	63
Germany	388	6	....
Switzerland	8	....	....
Czechoslovakia ..	20	....	....
Netherlands	9	....	....
Sweden .....	....	35	....
United States....	25	147	85
Yokohama* .....	....	335	418
Total	477	637†	516

Black Welded Pipe			
	1924	1923	1922
Kwangtung	131	117	....
United Kingdom..	1,874	1,995	744
Germany	11,203	2,611	193
Belgium	14	14	6
Switzerland	5	27	8
Netherlands	909	224	....
Sweden	7	18	33
United States....	20,292	13,881	12,828
Other countries..	95	....	....
Yokohama* .....	....	10,733	15,194
Total	34,530	29,620†	29,006

Galvanized Welded Pipe			
	1924	1923	1922
United Kingdom..	120	....	2
Germany	106	23	....
Sweden	2	9	....
United States....	2,875	1,356	1,401
Yokohama* .....	....	1,364	1,883
Total	3,103	2,752†	3,286

Iron and Steel Scrap			
	1924	1923	1922
China	1,992	2,883	2,512
Kwangtung	1,515	5,463	3,489
Hongkong .....	....	139	....
India	3,767	4,442	....
Straits Settlements	1,846	2,363	669
Dutch East Indies	9,495	3,633	674
French Indo-China	409	....	....
Russia in Asia...	631	942	4,079
Philippine Islands	1,094	1,922	....
United Kingdom..	6,130	398	494
Germany	226	138	398
United States....	8,780	5,500	12,652
Canada .....	....	292	....
South Africa....	4,394	....	....
Other countries..	1,527	....	....
Yokohama* .....	....	23,834	28,140
Total	41,746	51,949†	53,107

Nails			
	1924	1923	1922
Kwangtung .....	....	522	6
United Kingdom..	1,169	106	19
Germany	13,737	6,319	7,437
Belgium	1,992	....	949
Netherlands	400	....	....
Sweden	272	127	148
Norway	5	4	2
United States....	19,330	10,681	4,768
Canada .....	....	72	....
Yokohama* .....	....	4,547	19,055
Total	36,905	22,378	32,384

Screws			
	1924	1923	1922
Kwangtung	3	4	....
United Kingdom..	111	60	7
Germany	42	5	18
Sweden	25	....	....
United States....	1,698	1,335	807
Australia	4	....	....
Yokohama* .....	....	234	266
Total	1,883	1,688†	1,098

Rivets			
	1924	1923	1922
United Kingdom..	158	88	98
Germany	180	68	47
United States....	62	59	123
Other countries..	4	....	....
Yokohama* .....	....	56	110
Total	404	271†	378

Bolts, Nuts and Washers			
	1924	1923	1922
Kwangtung	6	....	4
United Kingdom..	137	85	76
Germany	242	171	91
Belgium	54	....	....
Switzerland	5	3	10
Netherlands .....	....	....	18
United States....	413	736	820
Yokohama* .....	....	180	516
Total	857	1,175†	1,520

Rails			
	1924	1923	1922
Kwangtung	21	....	....
United Kingdom..	6,538	320	1,470
France	4,787	....	....
Germany	23,611	19,581	13,988
Belgium	7,886	146	4,219
Switzerland	71	....	....
Netherlands	195	392	1,172
United States....	58,542	51,257	67,413
Yokohama* .....	....	46,180	82,512
Total	101,651	117,876	170,774

Splice Bars			
	1924	1923	1922
United Kingdom..	120	....	15
France	264	....	....
Germany	1,690	845	848
Belgium	243	....	153
Switzerland	4	....	9
Netherlands	23	11	77
United States....	2,607	3,546	3,611
Yokohama* .....	....	1,554	4,142
Total	4,956	5,956†	8,855

Fabricated Structural Steel			
	1924	1923	1922
United Kingdom..	2,171	5	98
France	19	155	....
Germany	742	674	14
United States....	17,551	5,854	6,085
Canada .....	....	67	12
Yokohama* .....	....	1,064	1,471
Total	20,483	7,819†	7,680

NOTE: *Among the totals for articles for 1923, those bearing the mark † do not include the figure for August for Yokohama and mark ‡, the figure for July and August combined.

The statistics for the whole years 1922 and 1923 (January-August) concerning Yokohama are not included in the items for each country, but they are included in the totals, except as noted above.

Resume by Countries			
	1924	1923	1922
China	170,196	106,657	135,749
Kwangtung	96,667	66,558	54,155
Hongkong** .....	....	139	....
India	162,818	137,267	87,673
Straits Settlements**	1,846	2,363	669
Dutch East Indies	9,732	3,633	674
French Indo-China**	409	....	....
Russia in Asia**	631	942	4,079
Philippine Islands**	1,094	1,922	....
United Kingdom	344,708	197,480	86,107
Germany	217,692	107,362	131,421
Belgium	161,251	81,800	50,093
France	12,645	805	3,331
Netherlands	7,779	1,829	2,217
Norway	8	4	2
Sweden	22,161	2,701	6,388
Austria	234	51	85
Denmark	1,355	6	....
Italy	1,277	....	....
Switzerland	98	34	22
United States....	407,700	179,919	356,893
Australia	4	....	103
Canada	2,104	481	29
South Africa**..	4,334	....	....
Other countries..	2,081	....	....
Yokohama* .....	....	294,667	528,107
Czechoslovakia ..	20	....	....
Total	1,628,844	1,186,619	1,460,742

**Figures are entirely for scrap.

Malleable Casting Business Better Than a Year Ago

WASHINGTON, Sept. 28.—Production of malleable castings in August totaled 57,541 tons compared with 55,555 tons in July, according to reports of the Department of Commerce from 139 identical plants. Seven plants with a monthly capacity of 3650 tons were idle during August. Shipments for the month aggregated 57,246 and orders booked, 48,922 tons. The Department says that a number of plants have been unable

to report orders. The production of such plants in August of the present year amounted to 4255 tons.

The reporting plants had a capacity of 109,161 tons, so that operations in August were at the rate of 52.7 per cent as against 51.1 per cent in July. Production during the eight months of the current year totaled 517,559 tons as against 484,370 tons for the corresponding period of 1925. Orders booked during the eight months of the present year aggregated 434,985 tons compared with 428,490 tons for the corresponding period of last year.

Exports Decline; Imports Gain

Shipments of Iron and Steel Smaller Than for July This Year or August, 1925—Exports for First Eight Months Show Increase of 225,000 Tons

WASHINGTON, Sept. 28.—Exports of iron and steel products from the United States declined to 171,588 gross tons in August from 194,717 tons in July, while imports increased to 91,578 tons from 82,411 tons. Exports in August of last year, totaling 188,963 tons, were a little more than 17,000 tons above those for August of the current year, while imports in August of last year, 68,489 tons, were more than 23,000 tons below those for August, 1926. Exports for the first eight months of 1926, amounting to 1,394,888 tons, showed an increase of almost 225,000 tons over those of the corresponding period of last year. Imports for the eight months of the present year, aggregating 786,850 tons, were 170,000 tons larger than those for the corresponding period of 1925.

The largest increases in exports during the eight months ended Aug. 31, 1926, were in steel bars, plates, galvanized and black steel sheets, tin plate, plain struc-

tural material and rolled pipe. One of the principal declines was in rails. The outstanding gain in imports during the eight months of the current year was in pig iron, amounting to 91,150 tons.

Germany led as a source of total imports both for August, 1926, and the eight months, supplying 24,148 tons and 176,971 tons respectively. Belgium ranked second for both periods. Of the imports from Germany in August, 13,200 tons, or more than 50 per cent, consisted of pig iron. But finished steel imports from Germany also continue to come to the United States in growing volume. All of the imports from Belgium during August except scrap consisted of finished material, such as shapes, hoop steel, rails and cast-iron pipe.

Canada, as usual, led by far as the principal destination of exports in August, taking 78,434 tons, and also for the eight months, taking 561,863 tons as compared with 384,661 tons for the corresponding period of last year. Japan ranked second as a foreign market for American steel products both in August and the eight months, taking 11,207 tons and 167,552 tons respectively.

Rails ranked first among the items exported in August. Of the 20,133 tons shipped abroad, Japan took the largest tonnage of any consuming country, 3903 tons, while Canada was second, taking 3413 tons. Japan also led as a destination for rail exports during

Sources of American Imports of Iron Ore

	(In Gross Tons)		Eight Months Ended August	
	August		1926	
	1926	1925	1926	1925
Chile	131,400	100,000	929,200	663,200
Cuba	66,800	15,512	382,500	353,630
Spain	3,357	5,600	82,412	130,125
Sweden	7,884	19,819	22,805	85,707
French Africa....	23,654	5,750	228,191	124,745
Canada	763	252	14,748	5,123
Other countries..	25,293	22,727	82,126	44,705
Total	259,151	170,660	1,741,982	1,407,235

United States Imports of Pig Iron by Countries of Shipment

	(In Gross Tons)		Eight Months Ended August	
	August		1926	
	1926	1925	1926	1925
British India.....	4,067	19,775	4,885	75,250
Netherlands	5,340	5,309	5,042	54,816
Germany	13,200	1,409	10,573	113,420
United Kingdom..	3,244	3,350	8,724	92,039
Canada	78	...	230	3,326
Belgium .....	...	100	450	6,098
France .....	...	...	1,800	26,833
Other countries..	609	764	180	5,122
Total	26,538	30,707	32,206	376,904

United States Imports of Iron and Steel Products by Countries of Origin

Countries of Origin (In Gross Tons)		
From	August, 1926	January Through August
Austria	131	538
Belgium	23,377	145,959
Czechoslovakia	40	719
Denmark	2,376	2,409
Finland .....	.....	799
France	7,179	93,817
Germany	24,148	176,971
Italy	170	563
Lithuania .....	.....	1,530
Netherlands	6,146	71,061
Norway	2,010	11,288
Poland and Danzig	213	816
Sweden	2,786	19,466
United Kingdom	6,177	113,138
Other Europe	15	24
Europe	74,768	639,098
Canada	11,875	51,514
Panama .....	.....	7,748
Mexico	54	8,023
Cuba	809	4,408
Other America	1	475
America	12,739	72,168
India	4,067	75,660
Other Asia	4	25
Algeria and Tunis .....	.....	7
Total	91,578	786,958

Exports of Iron and Steel from the United States

	(In Gross Tons)		Eight Months Ended August	
	August		1926	
	1926	1925	1926	1925
Pig iron	2,744	5,944	14,455	19,495
Ferromanganese ..	61	...	394	4,080
Ferrosilicon .....	...	...	...	...
Scrap	5,943	11,461	77,068	57,245
Pig iron, ferroalloys and scrap	8,748	17,405	91,917	80,820
Ingots, blooms, billets, sheet bar, skelp...	13,351	7,237	56,307	47,340
Wire rods	1,086	787	11,502	15,614
Semi-finished steel..	14,437	8,024	67,809	62,951
Steel bars	10,005	10,599	90,029	73,596
Alloy steel bars....	271	179	3,562	2,707
Iron bars	579	454	3,138	3,534
Plates, iron and steel..	13,389	9,576	92,484	69,396
Sheets, galvanized....	14,060	10,985	117,281	109,696
Sheets, black steel....	7,427	9,374	115,881	53,787
Sheets, black iron....	987	1,313	13,039	9,334
Hoops, bands, strip steel	2,602	3,544	32,648	25,864
Tin plate; terne plate.	17,788	12,402	136,327	101,099
Structural shapes, plain material	18,764	11,170	107,161	61,065
Structural material, fabricated	6,062	7,247	56,772	45,060
Steel rails	20,133	25,468	111,565	121,222
Rail fastenings, switches frogs, etc.	3,524	5,869	27,937	26,574
Boiler tubes, welded pipe and fittings...	18,356	36,587	178,625	167,664
Plain wire	2,097	3,034	23,959	25,075
Barbed wire and woven wire fencing	3,800	5,044	39,347	48,335
Wire cloth and screening	160	198	1,370	1,223
Wire rope and cable...	317	342	3,219	3,160
Wire nails	830	833	8,258	5,960
Other nails and tacks.	606	743	5,749	6,175
Horseshoes	101	103	448	501
Bolts, nuts, rivets and washers, except track	900	1,810	9,221	11,808
Roll and finished steel	142,758	156,874	1,178,020	972,835
Cast iron pipe and fittings	2,003	2,408	22,891	19,393
Car wheels and axles.	884	1,536	10,759	14,229
Iron castings	1,017	1,038	6,358	6,541
Steel castings	488	262	5,709	3,298
Forgings	267	200	1,990	1,612
Castings and forgings	4,659	5,444	47,707	45,073
All other	986	1,216	9,432	8,238
Total	171,588	188,963	1,394,885	1,169,920

the eight months, taking 20,562 tons, as compared to 18,629 tons shipped to Canada. Plain shapes were the second largest item of exportation in August, aggregating 18,764 tons, of which Canada took 13,325 tons. Of the 107,161 tons of plain material exported during the eight months, 81,272 tons went to Canada. Of the 14,060 tons of galvanized sheets exported in August, British India took 2660 tons, leading other countries. Canada took 2409 tons. Japan was the most important market for exports of black welded pipe in August, taking 1700 tons of the 6113 tons exported.

Next to Germany, the Netherlands were the greatest source of imports in August, supplying 5340 tons. For the eight months imports from Holland amounted to 54,816 tons. Germany led also as the source of pig-iron imports for this latter period, furnishing 113,420 tons, as against 92,039 tons from the United Kingdom, which ranked second. Imports of iron ore in August totaled 259,151 tons, of which 131,400 tons came from Chile, the leading source. Chile also led for the eight months, supplying 929,200 tons of the 1,741,982 tons imported. Of the 41,075 tons of manganese ore imported in August, 16,063 tons came from Brazil, 11,328 tons from Soviet Russia, 6759 tons from British West Africa, 4278 tons from British India, 1535 tons from British South Africa and 1092 tons from Chile. Of the 12,620 tons of structural shapes imported in August, 12,337 tons consisted of plain material, of which Belgium supplied 9013 tons, while Germany furnished 2730 tons and France 594 tons. Of the 3523 tons of ferromanganese imported during the month, 2000 tons came from Norway and 1515 tons from Canada, with none from England, which ordinarily is the principal country of imports of this alloy. Of the 13,505 tons of scrap steel imported in August, 7849 tons came from Canada and 2436 tons from the United Kingdom. Belgium supplied 5883 tons of the 8822 tons of steel bars imported that month; Germany furnished 1204 tons; Sweden 918 tons and the Netherlands 293 tons. Germany led as the source of imports of hoops, bands, etc., supplying 1565 tons of the 3472 tons for August. Belgium supplied 1369 tons and the Netherlands 456 tons. Of the 5871 tons of steel rails imported in Au-

Imports of Iron and Steel into the United States

	(In Gross Tons)		Eight Months Ended August	
	August			
	1926	1925	1926	1925
Pig iron.....	26,538	30,707	376,904	285,754
Ferromanganese*.....	3,523	3,369	27,134	47,899
Ferrosilicon.....	1,088	157	7,462	3,764
Scrap.....	13,505	6,602	48,571	61,017
Pig iron, ferroalloys and scrap.....	44,654	40,835	460,071	398,434
Steel ingots, blooms, billets and slabs..	1,309	915	22,271	19,372
Iron blooms, slabs, etc.	281	....	323	....
Wire rods.....	817	528	6,216	5,161
Semi-finished steel...	2,407	1,443	28,810	24,533
Rails and splice bars..	6,579	3,031	42,919	30,388
Structural shapes.....	12,620	6,291	71,054	55,198
Boiler and other plates	27	125	3,593	358
Sheets and saw plates..	1,465	311	5,249	2,558
Steel bars.....	8,822	4,458	72,617	39,371
Bar iron.....	746	594	3,953	8,717
Hoops, bands and cotton ties.....	3,472	....	15,665	....
Tubular products (wrought).....	1,248	10,275	17,035	47,762
Nails, tacks, staples....	856	278	3,222	1,987
Tin plate.....	7	13	2,015	211
Bolts, nuts, rivets and washers.....	32	20	294	73
Round iron and steel wire.....	265	405	2,654	2,633
Barbed wire.....	160	....	2,331	....
Flat wire; strip steel..	486	178	3,046	1,440
Steel telegraph and telephone wire.....	....	....	121	....
Wire rope and strand..	293	122	1,868	1,603
Other wire.....	108	....	1,221	....
Wire cloth and screening.....	9	....	246	....
Rolled and finished steel.....	37,195	26,101	249,103	192,299
Cast iron pipe.....	7,165	....	47,124	....
Castings and forgings..	157	110	1,741	1,127
Horseshoes.....	....	....	1	....
Total.....	91,578	68,489	786,850	616,393
Manganese ore*.....	41,075	34,168	275,669	149,779
Iron ore.....	259,151	170,660	1,741,982	1,407,235
Magnetite.....	4,604	6,162	57,941	69,291

*Manganese content only.

gust, 3246 tons came from Belgium and 2534 tons from Germany. Of the 7165 tons of cast-iron pipe imported in that month, 4954 tons came from France and 2191 tons from Belgium.

JAPAN ASKS HIGHER TARIFF

Steel Producers Point to Low-Priced Imports—Japan May Form Cartels Similar to European

WASHINGTON, Oct. 5.—Stimulation has been given to the movement for further increases in Japanese import duties on iron and steel products as the result of greater receipts in Japan of iron and steel priced at a lower figure than the Japanese products, according to a report made to the Department of Commerce by Commercial Attaché Herring, who is stationed at Tokio. Mr. Herring pointed out that it is the policy of the Japanese government to make Japan self-contained in steel supplies but the competition from European countries is said in that country to have resulted in the closing down of a number of smaller furnaces and mills. In consequence, the government is considering the desirability of higher duties and it is believed in Japan to be probable that the matter, after further consideration by the Finance Ministry, will be presented to the Diet when it reassembles.

Importers of steel in Japan, Mr. Herring said, maintained that the recent competition from continental countries is to be regarded as abnormal and temporary, and that a change in the permanent tariff schedules is consequently not justified. They point out that the effect of the Franco-German-Belgian-Luxemburg steel cartel should be a stiffening of prices and anticipatory rises in quotations for Japanese delivery are reported to have been general during the past few weeks. It is the opinion, however, that a consistent increase in French and Belgian quotations sufficient to guarantee Japanese producers their present shares of home demand can hardly be assumed until the export price fixing policies of the syndicate are established.

"The Japanese steel industry is watching with keen

interest the continental negotiations, and the European proposals have stimulated the discussion of closer organization in Japan," said Mr. Herring. "Thus, at a recent meeting of the Steel Producers' Association, the possibility of establishing a common sales agency was considered. It appeared to be the consensus of opinion, however, that a pooling of sales for the entire industry might be premature and that for the present combinations by localities might be preferable.

"In the meantime the Nippon Steel Pipe Co., the Kamaishi Iron Works and the Fuji Steel Works are said to be considering arrangement for the combination marketing of bars, which might have an important effect on the domestic finishing industries, as the average monthly production of these three concerns amounts to 14,000 metric tons."

French Steel Exports Slightly Less

WASHINGTON, Oct. 4.—French exports of iron and steel products for the first six months of the current year were 2,059,140 metric tons, as reported by the Iron and Steel Division, Department of Commerce, or 36,831 tons less than the amount exported during the first half of 1925. Imports in the first half of the current year were 112,031 metric tons, or 555 tons more than in the like period of last year. The principal items contributing to the 1926 exports were, in the order of the volume of shipments, rolled blooms, foundry pig iron, rails, rail chairs, structural material, hot-rolled sheets, iron and steel scrap, tubes and fittings and wire.

A new automatic bookkeeping machine that posts ledgers and proves its postings has been developed by the Burroughs Adding Machine Co., Detroit.

European Cartel Strengthens Prices

New International Agreement and Continued British Strike Maintain Upward Trend
—British Iron Reaches New High Levels

(By Cable)

LONDON, ENGLAND, Oct. 4.

THE pig iron famine continues unrelieved and as high as £5 12s. has been paid for small lots of Cleveland No. 3. Only one Cleveland foundry furnace is in blast and hematite is scarce with one furnace active. Foreign ore is quiet.

The finished steel demand is improving, based on the hope of an early termination of the coal strike. Works are carrying on as well as possible using foreign fuel, but delays in the arrival of coal from abroad are compelling further stoppages. Hadfields, Ltd., is closing this week, Brown-Bayleys Steel Works is curtailing output and the Mannesmann Tube Co. has suspended, pending arrival of foreign coal. The Clyde shipbuilding output in September was eight vessels of 40,000 tons.

The Continental market is strong as a result of the inauguration of the European Steel Cartel and continued British demand. Most works are fully sold for many weeks in advance. Semi-finished is very scarce.

The tin plate outlook is improving with substantial orders accumulating. Some first quarter business has already been booked, including about 250,000 boxes of oil can sizes to Asiatic interests. Prices are generally unchanged, but makers are showing reserve in making forward sales because of doubtful costs. General export demand is improving but sales are still restricted.

Galvanized sheet demand is expanding, but sales are confined to small parcels, although the tone of the market is very firm. Black sheets are quiet, but No. 24 gage has been advanced as a result of increasing cost.

German Steel Rebates Confirmed—Does Steel Pool Stop Them?

By Radio

BERLIN, GERMANY, Oct. 5.

The market is more active. The steel syndicate has retained for October its 30 per cent reduction of output.

The Berlin commission of inquiry into export bounties has agreed to hold its report to the Treasury De-

partment as confidential until it is received at Washington. It is understood that the inquiry confirmed already published reports concerning price rebates on steel delivered to domestic exporting manufacturers. The commission did not inquire, however, whether such deliveries are at prices below production cost.

Steel men declare that since the formation of the international steel pool the question of American countervailing duties is dead, because European Continental prices will rise to the level of German prices, whereupon German export rebates will automatically cease.

JAPAN BUYS PIPE HERE

Tin Plate Orders Also Go to United States But Large Rail Tonnage Is Placed in France

NEW YORK, Oct. 5.—Export to Japan continues moderately active with several of the recent outstanding tonnages placed in the United States. The Toho Gas Co. has awarded 193,000 ft. of gas pipe, $\frac{3}{4}$ to 2 in., to Mitsui & Co., the pipe to be furnished by a large American interest. The 500 tons of heavy beams for which the Imperial Government Railways in Japan have been in the market are also reported placed with Mitsui & Co. The 10,000 tons of 100-lb. rails for the government railroads, however, are reported placed with a Continental maker, probably the De Wendel works in France.

Among prospective inquiries from Japan is a lot of 57 miles of 100-lb. rails (9000 tons) for the Shin Kei Han Electric Railway. It is rather generally expected among exporters that this business will go to a European maker. The Imperial Government Railways order is reported to have been placed at between \$35 and \$36 per ton, c.i.f. Japan.

There has been fairly active purchasing of tin plate. Among recent awards is the 5000 base boxes for the Japanese army, its annual requirements, reported placed with an American mill. Small lot purchases of tin plate by Japanese exporters have probably totaled close to 30,000 base boxes in the month of Sep-

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.86 per £ as follows:

Durham coke, f.o.b.	£2 15s.		\$13.37	
Bilbao Rubio ore†	0 19 $\frac{1}{4}$	to £1 0s.	4.80	to \$4.86
Cleveland No. 1 fdy.	5 12 $\frac{1}{2}$		27.34	
Cleveland No. 3 fdy.	5 12		27.22	
Cleveland No. 4 fdy.	5 9		26.49	
Cleveland No. 4 forge	5 8 $\frac{1}{2}$		26.37	
Cleveland basic (nom.)	3 15	and 3 15 $\frac{1}{2}$	18.23	and 18.35
East Coast mixed	4 7 $\frac{1}{2}$		21.26	
East Coast hematite	4 8		21.38	
Rails, 60 lb. and up	7 0	to 8 0	34.02	to 38.88
Billets	6 10	to 8 0	31.59	to 38.88
Ferromanganese	14 0		68.04	
*Ferromanganese	14 0		68.04	
Sheet and tin plate bars, Welsh	6 5	to 7 10	30.38	to 36.45
Tin plates, base box	1 0 $\frac{1}{2}$	to 1 3	4.95	to 5.59
Black sheets, Japanese specifications	15 5	to 15 10	74.12	to 75.33
Ship plates	7 10	to 8 0	1.62	to 1.73
Roller plates	9 15	to 11 0	2.11	to 2.39
Tees	8 0	to 8 10	1.73	to 1.84
Channels	7 5	to 7 15	1.57	to 1.68
Beams	7 0	to 7 10	1.52	to 1.63
Round bars, $\frac{3}{4}$ to 3 in.	8 0	to 8 10	1.73	to 1.84
Steel hoops	10 10	and 11 0*	2.28	and 2.39*
Black sheets, 24 gage	11 15	to 11 17 $\frac{1}{2}$	2.54	to 2.58
Galv. sheets, 24 gage	16 10	to 16 15	3.58	to 3.63
Cold rolled steel strip, 20 gage, nom.	18 0		3.91	

*Export price.

†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports (Per Metric Ton)

Foundry pig iron:(a)				
Belgium	£3 13 $\frac{1}{2}$ s.	to £3 15s.	\$17.86	to \$18.22
France	3 13 $\frac{1}{2}$ s.	to 3 15	17.86	to 18.22
Luxemburg	3 13 $\frac{1}{2}$ s.	to 3 15	17.86	to 18.22
Basic pig iron:				
Belgium	3 6	to 3 9	16.04	to 16.78
France	3 6	to 3 9	16.04	to 16.78
Luxemburg	3 6	to 3 9	16.04	to 16.78
Coke	0 18		4.37	
Billets:				
Belgium	5 0	to 5 5	24.30	to 25.52
France	5 0	to 5 5	24.30	to 25.52
Merchant bars:				
Belgium	5 8	to 5 10	1.19	to 1.21
Luxemburg	5 8	to 5 10	1.19	to 1.21
France	5 8	to 5 10	1.19	to 1.21
Joints (beams):				
Belgium	5 7 $\frac{1}{2}$	to 5 15	1.18	to 1.26
Luxemburg	5 7 $\frac{1}{2}$	to 5 15	1.18	to 1.26
France	5 7 $\frac{1}{2}$	to 5 15	1.18	to 1.26
Angles:				
Belgium	5 10		1.21	
$\frac{1}{2}$ -in. plates:				
Belgium (nominal)	6 10	to 6 15	1.43	to 1.49
Germany (nominal)	6 10	to 6 15	1.43	to 1.49
$\frac{3}{4}$ -in. ship plates:				
Belgium	6 2 $\frac{1}{2}$	to 6 10	1.35	to 1.43
Luxemburg	6 2 $\frac{1}{2}$	to 6 10	1.35	to 1.43
Sheets, heavy:				
Belgium	6 3	to 6 4	1.33	to 1.34
Germany	6 3	to 6 4	1.33	to 1.34

(a) Nominal.

tember. One large export house closed a total of 13,000 boxes early in the month and orders for 9000 boxes expected Sept. 30, brought the total to about 22,000. Another exporter closed 2000 boxes in September and others closed from 500 to 1500 boxes during the month.

Importers of Continental steel in New York continue active, but apparently are not securing orders without competition from domestic sellers. One lot of 1000 tons reinforcing bars recently before the market is reported by importers to have been placed by the contractor with a warehouse handling domestic bars at 2.32c. per lb., which was higher than the foreign quotation but covered prompt shipment from stock.

FRENCH MARKET INACTIVE

Higher Coke and Franc Exchange Have Not Caused Advances

PARIS, FRANCE, Sept. 24.—Apparently the usual fall revival of business will not develop this year. The iron and steel industry feels that the market is in a critical position where a false move, either in the advance or reduction of prices might prove extremely detrimental. As a result, although the franc declined slightly last week, no advance in prices was suggested. The rise in price of German coke has also been a temptation to advance quotations, but consumers are apparently not yet in the proper frame of mind to accept a much higher price level than the present, although there is no evident desire for a decline.

Pig Iron.—Demand for both phosphoric foundry and hematite pig iron has declined, but producers, at a recent meeting, decided to maintain the present prices and terms, despite some pressure for a reduction. Allotments of iron for domestic consumption have been fixed at 35,000 tons of phosphoric foundry with 5000 tons of reserve for October and 35,000 tons of hematite for October with 20,000 tentatively fixed for November. There is an active export demand, but iron for spot shipment is scarce. The French-Belgian-Luxemburg association of producers has established an export price of £3 11s. 6d. per metric ton, f.o.b. Antwerp (about 610 Belgian francs) and the quotation to Swiss consumers is unchanged at 82.50 fr. (Swiss), f.o.t. Basle, Switzerland. The demand from British users of pig iron has been large with Middlesbrough quotations on Cleveland foundry at £4 12s. 6d. per ton compared with a European price of £4 10s. per metric ton, delivered.

Finished Material.—Available stocks are sufficient to meet the requirements of the smaller consumers and the large plants are in most cases so heavily stocked that they are competing keenly for business in an effort at reduction that may result in the offering of concessions. For export, beams are offered at £5 4s. to £5 6s. per metric ton and bars are scarce at £5 9s. to £5 10s. per ton, f.o.b. Antwerp. The large railroads have definitely accepted 795 fr. as the price on rails delivered during the first half. Exports of hoops have declined. Ordinary black hoops are quoted at 1150 fr., f.o.b. to domestic users. Exports of wire rods have improved, and foreign demand for sheets continues active.

Exports of Machinery Recede

August Total Below That of July, but Exports for First Eight Months Show Gain—August Imports Increase—Heavy Exports of Locomotives

WASHINGTON, Sept. 28.—Reflecting a decline of almost \$2,000,000, exports of machinery in August were valued at \$32,459,844 as against \$34,123,992 in July. For the eight months ended with August, however, the total value of exports was \$270,555,215, or a gain of about \$28,000,000 over the corresponding period of last year. Exports of power-driven metal-working machinery in August were valued at \$1,326,443, compared with \$1,318,556 in July, while for August of last year the value was \$1,754,150. For the eight months ended with August, 1926, the value of this class of machinery amounted to \$9,624,318, as against \$12,146,335 for the corresponding period of 1925. Exports of other metal-working machinery in August of the current year were

valued at \$299,456 compared with \$371,787 in July and \$502,705 in August, 1925, when the classification included some power-driven machinery. For the eight months ended with August of the present year the value was \$2,952,120, compared with \$2,887,404 in the same period last year. Exports of power-driven metal-working machinery listed in THE IRON AGE table repre-

Exports of Power-Driven Metal-Working Machinery				
	August, 1926		July, 1926	
	No.	Value	No.	Value
Engine lathes.....	20	\$75,066	12	\$28,811
Turret lathes.....	23	5,352	11	27,814
Other lathes.....	37	36,423	71	107,683
Vertical boring mills...	9	14,068	3	918
Thread-cutting and automatic screw machines.....	66	48,927	114	85,225
Knee and column-type milling machines....	12	25,310	35	93,420
Other milling machines	22	45,370	25	34,021
Disk-type gear-cutting machines.....	6	13,109	1	2,850
Other gear-cutting machines.....	12	42,227	18	47,211
Vertical drilling machines.....	16	61,545	17	21,209
Radial drilling machines	3	8,282	2	7,409
Sensitive drilling machines.....	80	1,254	28	3,286
Other drilling machines	91	25,210	62	23,120
Shapers and slotters...	55	32,499	16	30,453
Planers.....	..	..	2	1,420
External cylindrical machines.....	19	39,492	46	92,992
Internal grinding machines.....	22	35,335	8	14,238
Metal-working tool-sharpening machines	150	36,405	71	15,503
Total.....	643	\$545,874	542	\$637,583

Imports of Machinery into the United States				
(By Value)				
	August		Eight Months Ended August	
	1926	1925	1926	1925
Metal-working machine tools and parts	\$17,353	\$44,671	\$296,799	\$266,511
Agricultural machinery and implements	264,799	136,251	3,849,573	2,249,413
Electrical machinery and apparatus	238,431	205,941	1,565,396	1,528,130
Other power-generating machinery..	5,473	293	63,630	6,957
Other machinery..	748,904	347,902	5,797,431	2,931,515
Vehicles, except agricultural	178,949	153,087	1,383,039	1,239,494
Total	\$1,453,909	\$888,145	\$12,955,868	\$8,222,020

sented 643 machines with a value of \$545,874 in August, as against 542, valued at \$637,583, in July.

Total imports of industrial machinery in August of the present year were valued at \$1,608,918 as against \$1,484,127 in July, while machinery listed in THE IRON AGE table was imported to the value of \$1,453,909 in August, 1926, as against \$1,327,876 in July and \$888,145 in August of last year. For the eight months ended with August, 1926, industrial machinery imports were valued at \$11,089,345, compared with \$6,982,345 for the corresponding period of last year.

One of the striking gains made in exports in August, as compared with July and August of last year,

Machinery Exports from the United States

(By Value)

	August, 1926	August, 1925	Eight Months Ended August, 1926	August, 1925
Locomotives.....	\$1,298,399	\$166,114	\$4,334,421	\$3,653,904
Other Steam Engines.....	126,953	243,305	666,940	992,196
Boilers.....	96,246	189,715	1,133,564	1,412,703
Accessories and Parts.....	125,977	222,317	1,070,417	1,316,091
Automobile Engines.....	794,773	\$46,219	9,859,289	11,574,819
Other Internal Combustion Engines.....	1,120,248	1,012,666	6,250,668	5,750,878
Accessories and Parts.....	388,129	366,838	2,007,639	2,782,440
Electric Locomotives.....	62,144	10,064	1,614,587	305,045
Other Electric Machinery and Apparatus.....	580,509	684,687	4,798,077	4,537,081
Excavating Machinery.....	208,362	304,525	3,096,759	2,416,634
Concrete Mixers.....	48,157	99,114	520,612	528,501
Road Making Machinery.....	107,451	126,824	1,274,880	972,657
Elevator and Elevator Ma- chinery.....	352,002	190,155	3,367,437	1,489,383
Mining and Quarrying Ma- chinery.....	1,084,858	797,077	10,433,622	6,789,798
Oil Well Machinery.....	1,082,904	892,215	9,104,635	6,663,880
Pumps.....	417,769	819,650	4,032,364	4,883,494
Lathes.....	116,841	307,652	1,148,494	1,655,637
Boring and Drilling Machines.....	110,359	87,679	589,853	485,518
Planers, Shapers and Slotters.....	32,499	63,724	216,249	439,560
Bending and Power Presses.....	212,494	39,145	803,653	410,610
Gear Cutters.....	55,336	64,041	350,597	583,768
Milling Machines.....	70,680	206,230	683,522	1,147,679
Thread-Cutting and Screw Machines.....	48,927	113,535	478,806	720,868
Punching and Shearing Ma- chines.....		16,004		159,485
Forging Machinery.....	129,223	16,940	812,691	188,382
Sharpening and Grinding Ma- chines.....	130,540	275,470	1,367,825	2,142,916
Other Metal-Working Ma- chinery and Parts.....	299,456	502,705	2,952,120	3,757,424
Textile Machinery.....	531,034	952,781	7,206,311	7,172,817
Sewing Machines.....	610,191	793,449	5,653,435	5,984,439
Shoe Machinery.....	122,037	105,492	921,945	954,337
Flour-Mill and Gristmill Ma- chinery.....	40,531	100,967	582,440	628,370
Sugar-Mill Machinery.....	504,321	1,032,710	2,157,490	4,123,898
Paper and Pulp Mill Machinery.....	309,998	112,008	1,963,573	936,418
Sawmill Machinery.....	46,255	67,931	673,958	522,945
Other Woodworking Machinery.....	85,398	136,047	807,003	941,789
Refrigerating and Ice-Making Machinery.....	349,484	201,545	3,142,426	1,009,383
Air Compressors.....	391,679	326,545	3,255,206	3,600,637
Typewriters.....	954,010	1,075,292	12,400,422	11,760,280
Power Laundry Machinery.....	98,888	134,772	960,505	739,586
Typesetting Machines.....	330,066	240,760	2,482,794	2,367,943
Printing Presses.....	314,003	257,820	3,366,617	3,300,328
Agricultural Machinery and Implements.....	8,795,191	11,318,423	64,247,188	54,731,721
All Other Machinery and Parts.....	9,875,502	12,306,351	86,734,172	77,326,672
Total.....	\$32,459,844	\$37,830,003	\$270,555,215	\$242,757,814

was in locomotives. Shipments in August were valued at \$1,298,399, as against only \$369,749 in July and \$166,114 in August 1925. Of the August shipments, 10 locomotives, to the value of \$319,900, went to Brazil. For the eight months, Brazil took 53 American locomotives valued at \$1,339,115. Other South American countries took six locomotives, valued at \$76,200, in August, and 35, valued at \$622,538, during the eight months. Exports of automobile engines declined to a value of \$794,773 in August, as against \$815,233 in July and \$846,219 in August of last year. For the eight months of 1926, however, automobile engine exports totaled \$6,250,668, as against \$5,750,878 for the corresponding period of last year. Mining and quarrying machinery to the value of \$1,084,858 was exported in August of this year, as against \$1,153,250 in July and \$797,077 in August of last year. For the eight months ended with August, 1926, there was a sharp gain in this class of exports when compared with the corresponding period of last year, the respective totals being \$10,433,622 and \$6,789,798. Exports of oil well machinery increased to a value of \$1,082,904 in August of the present year, as against \$987,853 in July and \$892,215 in August, 1925. The increase was even relatively greater for the eight months ended with August, 1926, when compared with the corresponding period of last year, the respective totals being \$9,104,635 and \$6,663,880.

Mexico led as the greatest foreign market for sewing machines both for August and the eight months' period, taking 3661 machines, valued at \$130,010 during the month and 31,224 machines, valued at \$1,070,191, during the latter term. Brazil took 1441 sewing machines, valued at \$48,367, in August and 8341, valued at \$309,524, during the eight months. The United Kingdom was the destination of 484 sewing machines, valued at \$20,170, in August and 13,740, valued at \$757,592, during the eight months. France

received the heaviest shipments of American typewriters in August, taking 1641, valued at \$83,206, while for the eight months the number going to France was 26,231, valued at \$1,369,039. The United Kingdom ranked second in August, taking 1579 typewriters, valued at \$81,871, while it led for the eight months, taking 36,373, valued at \$1,987,112. Mexico took 1295, valued at \$73,224, in August and 10,495, valued at \$577,676, during the eight months. Spain took 876, valued at \$50,182, during the single month and 7786, valued at \$430,367, during the eight months.

ORDNANCE STAINLESS STEEL

Army Investigating Also Chromium Plating as Means to Resist Corrosion

WASHINGTON, Oct. 5.—The Army Ordnance Department has instituted active investigations concerning the practicability of the use of stainless steel to resist corrosion in the manufacture of recoil mechanisms, rifle barrels and other weapons of war. After five to seven years of storage of the carbon and alloy steels now used in recoil mechanisms it has been found that the mechanisms have been corroded and pitted to such an extent as to require relapping. The fouling resulting from the firing of rifles also produces corrosion in the bores of these weapons.

In connection with the study of stainless steel, one factor to be considered is the availability of special steels in times of emergency. It is the policy of the Ordnance Department and all other procurement agencies of the Army, for that matter, to use, as far as practicable, material and supplies of standard and commercial type that may be readily obtained.

Two samples of stainless steel have been obtained and made into piston-rods, one for the 75-mm. pack howitzer, and the other for the 75-mm. gun carriage. They show a remarkable polish, and have passed the necessary tension tests. They are being assembled in recoil mechanisms and will be subjected to firing and storage tests. Steps also have been taken to obtain stainless steel forgings from which to manufacture a recoil cylinder and a recuperator cylinder for the 105-mm. howitzer.

The inquiry centers largely around a stainless steel produced by a prominent firearms manufacturer, which is intended to do away with the after-corrosion in firearms, a subject which was investigated by Dr. Wilbur J. Huff of the research staff of the Bureau of Mines. Dr. Huff showed in the bureau's pamphlet, Technical Paper 188, published in 1922, that after-corrosion was due to the deposit of potassium chloride resulting from the burning of the priming mixture in the bore. Potassium chloride absorbs moisture from the air quite rapidly.

It has been held that there are two ways to solve the problem of corrosion in rifle barrels: 1. Stainless steel, which, it is stated, is expensive on account of the cost of the raw material and the difficulty and cost of machining; 2. A non-corrosive primer which does not contain potassium chlorate. At the present time, it was stated, the latter is much more economical.

Chromium Plating as a Preservative

The Ordnance Department also is investigating the method of electroplating chromium as a means of preventing corrosion in certain parts of matériel. The department in a statement said:

"The Ordnance Department is investigating the use of chromium plating as a preservative against corrosion in certain parts of ordnance matériel. The process of electroplating chromium is being introduced commercially, and it is possible this process may have some useful applications to ordnance matériel. The inside of recuperator mechanisms of artillery carriages must be given a very high polish, and prevention of corrosion of these finished surfaces is quite difficult, although most important. Chromium plating is very durable, and if it is possible to electroplate such surfaces the cost of care and maintenance of such parts would be greatly reduced."

Machinery Markets and News of the Works

INQUIRY IS ACTIVE

Prospective Business Shows Gain in Most Selling Centers

Delco Light Co. Places Additional Large Orders —Sales by Cincinnati Tool Builders for First Nine Months Show 20 Per Cent Gain

IN most selling centers inquiry is fairly active but buying shows little, if any, gain. Cincinnati, however, reports a good volume of current business and looks forward to sustained activity throughout the fourth quarter. Sales by Cincinnati machine tool builders for the first nine months of this year averaged 20 per cent larger than for the same period in 1925, and for at least three manufacturers equaled total bookings for the entire previous year. Production at Cincinnati is being maintained at a fairly high rate, with stocks low and deliveries gradually lengthening.

The Delco Light Co., Dayton, Ohio, is conspicuous

among recent buyers of machine tools. In addition to orders previously reported in these columns, this company has placed 40 grinders and 22 milling machines, four profiling machines and a number of presses. A Detroit automobile company has bought 11 engine lathes, which, added to its previous purchases, make a total of 36 lathes ordered in the past month.

At Chicago, the International Harvester Co. has bought equipment for a forge shop, including 13 machines, ranging from a 10,000-lb. steam hammer down to a 1500-lb. hammer. The Illinois Steel Co., Chicago, is about to close for 15 heavy duty lathes, and the Pullman Co., Chicago, is understood to be ready to place an equal number of lathes for its Atlanta, Ga., shops.

Cleveland reports that the White Motor Co. has purchased several production machines, but that most current orders are for single tools. At Pittsburgh the Westinghouse Electric & Mfg. Co. has added a few items to its quarterly list of approximately 50 machines. The market is reported as quiet both at New York and Boston.

New York

NEW YORK, Oct. 5.

THERE is no marked change in the volume of machine buying. Dealers and special sales representatives generally report the market as quiet. The expected increase in business in September did not develop, and sales figures for the month will not show any particular change from those of August. Sales of the week include the following: To Missouri Pacific Railroad, side-head boring mill, 1500-lb. steam hammer and three 100-ton bushing presses; to a crane company in New York State, a plate bending roll; to an electric manufacturer in the Pittsburgh district, side-head boring mill; to a Milwaukee motor car plant, a 16-in. geared-head lathe; to a Cincinnati valve manufacturer, a 6 x 48-in. thread milling machine; to a cash register manufacturer, four profiling machines; to a Detroit company, two multiple spindle drilling machines; to a Detroit pattern works, a contour cutter grinder; to a Philadelphia company, a hob and cutter grinder.

The Coldak Corporation, 8 West Fortieth Street, New York, manufacturer of electrical refrigeration machines, has acquired the plant and business of the Alaska Refrigerator Co., Muskegon, Mich., and will take immediate possession. The new owner will develop the plant for the production of complete electric refrigerating units. It is operated under the direction of the J. G. White Management Corporation, 33 Liberty Street, New York. John H. Pardee is president of both organizations.

Fire, Sept. 24, damaged a portion of the works of the Standard Metal Spinning Co., 128-38 Mott Street, New York, occupying a portion of the plant of the Henry Nelkin Plating & Polishing Works. An official estimate of loss has not been announced.

The Pacific Steel Boiler Corporation, 101 Park Avenue, New York, has had plans prepared by Beers-Tapman, Inc., 15 Park Row, New York, engineer and contractor, for a one-story boiler works, 55 x 74 ft., on 141st Street, near the Southern Boulevard.

George C. Wildermuth, receiver for the Rainier Trucks, Inc., Bayside Avenue and the Long Island Railroad, Flushing, L. I., has arranged for the sale of the property of the company, heretofore used for the manufacture of motor trucks.

The American Can Co., 120 Broadway, New York, is said to be planning the erection of a three-story addition to its branch plant at St. Paul, Minn., 100 x 125 ft., to cost approximately \$125,000 including equipment.

The Locomobile Co. of America, Inc., 16-24 West Sixty-

first Street, New York, has leased the two-story building, 100 x 120 ft., at 305-13 West Sixty-seventh Street, for the establishment of a new service and repair works. The present service station will be removed to the new site.

The Board of Education, Mount Vernon, N. Y., is said to be planning the installation of manual training equipment in its proposed new high school addition to cost \$150,000. Harold Werner, 25 West Thirty-third Street, New York, is architect.

Fire, Sept. 24, damaged a portion of the machinery and stock at the plant of the Aladdin Iron Works, 402-12 West Twenty-seventh Street, New York. An official estimate of loss has not been announced. The damage will be replaced.

The Packard Motor Car Co., Broadway and Sixty-first Street, New York, has plans for a two-story addition to its service, repair and garage building, 110 x 200 ft., on Atlantic Avenue, Brooklyn, including improvements in the present structure, to cost \$80,000. E. O. Holmgren, 371 Fulton Street, Brooklyn, is architect.

The Sinclair Refining Co., 45 Nassau Street, New York, has awarded a general contract to the Fisher-Williams Corporation, 103 Park Avenue, for a new oil storage and distributing plant at Grand Street and Newtown Creek, Brooklyn, to cost \$400,000 with equipment.

The International Folding Paper Box Co., 396 South Second Street, Brooklyn, has acquired property at North Bergen, N. J., as a site for a new two-story plant, 100 x 260 ft., to cost about \$85,000 with equipment. It is proposed to have the factory ready for occupancy by the first of the year, when the present plant will be removed to the new location.

The Nassau & Suffolk Lighting Co., Hempstead, L. I., is planning the construction of a steam-operated electric generating station for service at Island Park, Oceanside and vicinity.

Peter Widin, 66 Ann Street, New York, manufacturer of tools, has acquired the factory and adjoining property of the Shedd Electric Co., Roselle, N. J., and will remodel for a new plant. It is understood that the present works will be removed to the new location.

The Public Service Electric & Gas Corporation, Terminal Building, Newark, has awarded a contract to the Alberg Construction Co., 3 Church Street, Paterson, N. J., for a new one-story automobile service, repair and garage building, 57 x 102 ft., with two-story section, 60 x 125 ft., at Paterson, for company motor trucks and cars, reported to cost \$100,000 with equipment.

The Bayway Terminal, Bayway, Elizabeth, N. J., is disposing of a bond issue of \$3,000,000, the proceeds to be used for extensions in its cotton storage and distributing terminal. Conveying and other machinery will be installed. William J. MacMillan is president.

The Franklin Appliance Co., 208 Sylvan Avenue, Newark, N. J., has recently been organized with capital stock of \$50,000 to manufacture electric irons and other household

electrical appliances. The company has for some time been manufacturing these appliances in Philadelphia.

The Rajah Co., Bloomfield, N. J., manufacturer of spark plugs and terminals, has been incorporated to take over the business of the Rajah Auto Supply Co. The only change involved is the retirement of David B. Mills, principal owner and president of the company, whose interest has been acquired by four employees who have been associated with him for many years. New officers of the company are Robert A. Bell, president; Wilbur D. Washburn, treasurer; George Berthold, vice-president and engineer; Elizabeth G. Keeler, secretary.

The Adams Galvanizing Corporation and the Adolf Starke Co., have consolidated under the name of the Adams Starke Co., Inc., 575-583 Columbia Street, Brooklyn. The company is manufacturing spikes, bolts, washers and tie rods and also is doing a jobbing business in galvanizing. A. J. Adams is secretary.

The Stanton Forging Co., Inc., German and Everett Streets, Camden, N. J., manufacturer of hammered steel forgings and forged steel pipe flanges, has awarded a general contract to Lewis T. West, Camden, for an addition to its forging department, 50 x 50 ft., to cost about \$20,000 with equipment. Henry D. Rutter is president.

Philadelphia

PHILADELPHIA, Oct. 4.

CONTRACT has been let by the Electric Storage Battery Co., Nineteenth and Allegheny Streets, Philadelphia, to the H. G. Christman Co., Stevens Building, Detroit, for its one and two-story factory branch at Detroit, 110 x 250 ft., reported to cost about \$100,000 with equipment.

The American Heat Treating Co., Fifty-first Street and Lancaster Avenue, Philadelphia, has acquired the foundry of the McHatton Foundry Co., 1500-2 Washington Avenue, and contemplates the establishment of a new plant.

Smith, Drum & Co., Allegheny Avenue, Philadelphia, machinists, have awarded contract to Frank Crompton, 4614 Oakland Street, for a two-story addition, 100 x 100 ft., to cost \$45,000. Robert T. Smith and George E. Drum are heads.

The Philadelphia Electric Power Co., Philadelphia, affiliated with the Philadelphia Electric Co., Tenth and Chestnut Streets, is beginning work on its proposed hydro-electric power project near Conowingo, Md. The plant will have an initial output of 300,000 hp. and ultimate capacity of 500,000 hp. A steel tower transmission line will be constructed to Philadelphia and vicinity. The work will be carried out in conjunction with the Susquehanna Power Co., a subsidiary.

The Freihofer Baking Co., Twentieth and Indiana Streets, Philadelphia, has engaged C. B. Comstock, 110 West Fortieth Street, New York, architect and engineer, to prepare plans for rebuilding its plant recently destroyed by fire. The entire project is expected to cost in excess of \$400,000 including machinery.

Connery & Co., Inc., Second and Luzerne Streets, Philadelphia, manufacturer of boilers, tanks and other plate products, has plans for a three-story addition, 50 x 250 ft., to cost in excess of \$100,000 with equipment.

The Logan-Oakland Co., 4719 North Broad Street, Philadelphia, local representative for the Oakland automobile, will soon ask bids on general contract for a three-story service, repair and sales building, 60 x 180 ft., to cost more than \$125,000 with equipment. Thalheimer & Weitz, 10 South Eighteenth Street, are architects.

The Oxweld Railroad Service Co., Railway Exchange Building, Chicago, has filed plans for two one-story structures for a new factory branch at Germantown Avenue and Clarissa Street, Philadelphia, one building to be equipped for acetylene gas production.

The Duryea School District, Duryea, Pa., is considering the installation of manual training equipment in its proposed two-story and basement high school to cost \$250,000, for which work on superstructure will soon begin. Frank J. Miller, Washington Avenue and Spruce Street, Scranton, Pa., is architect.

The Holland Furnace Co., Bethlehem, Pa., manufacturer of warm air furnaces, with main plant at Holland, Mich., is disposing of a bond issue of \$3,500,000, a portion of the fund to be used for expansion in plants and distributing facilities, and for other purposes. A. H. Landwehr is treasurer.

The Williamsport-Buick Co., 406 West Third Street, Williamsport, Pa., has awarded a general contract to the H. K. Ferguson Co., for its three-story service, repair and garage addition, 100 x 150 ft., to cost approximately \$100,000 with equipment.

The Board of Education, Wanamie, Pa., is considering the installation of manual training equipment in its proposed two-story and basement junior high school estimated to cost \$135,000. Ralph M. Herr, Miners' Bank Building, Wilkes-Barre, Pa., is architect.

The Wiota Electric Co., Wiota, Pa., is planning for extensions, to include a new transmission line from Spring Grove, power substation equipment, switching apparatus, etc.

The Department of City Transit, 1211 Chestnut Street, Philadelphia, has awarded a general contract to the Golder Construction Co., 263 South Fifteenth Street, for its proposed car shops at the Fern Rock terminal to cost \$870,000 with equipment, and general inspection shop to cost \$225,000.

The Benjamin Auto Parts Co., 19 West Hemlock Street, Hazleton, Pa., has plans for a new one-story and basement factory at Pine and Maple Streets, 72 x 85 ft., to cost about \$26,000.

The Lapin Mfg. Co., 311 Freeman Building, Atlantic City, N. J., has been organized in Delaware with capital stock of \$100,000 to manufacture metal springs and other products. Its main product is to be a patented curtain support. The company's plant is at 93 Sabin Street, Providence, R. I.

New England

BOSTON, Oct. 4.

DULLNESS again prevails in the machine tool market, buying of the previous week proving to be but temporary. Transactions have involved small and comparatively inexpensive tools or used machines. Inquiries, however, are more numerous. Shops apparently are looking for single machines for special purposes. The trade is still negotiating on quite a sizable list of tools, inquiries for which were issued some time ago. It is believed some purchases will be made soon, and that others will be taken later with a 1927 dating.

Small tools are selling well and there is a good inquiry for parts. Demand for motors, particularly small horsepower, holds up remarkably well.

The Matheson Machine Shop, Water Street, South Quincy, Mass., will shortly begin the erection of a one-story plant, 30 x 100 ft., with ell, 16 x 50 ft. Batty & Gallagher, Inc., 13 Temple Street, Quincy, are the architects.

The Meriden Knife Co., North Street, Meriden, Conn., has purchased land at 105 Sherman Avenue on which it will soon erect a one-story plant. It will be operated in conjunction with the present plant. Edward Oefinger is manager.

The C. I. Packer Tool & Die Co., Meriden, Conn., has incorporated under the laws of that State with a capital of \$50,000 to manufacture tools and machinery. Clifford I. Packer, Meriden, and Willis D. Northrop, West Haven, are officers in the company.

The Capital Plating & Mfg. Co., Middletown, Conn., has acquired the plant of the Allison Soap Works of that city, and will specialize in finishing polished parts. It has a contract to finish 30,000 automatic target pistols. Patrick Morrison, Middletown, is president. William Goodison, Meriden, Conn., is financially interested in the company.

The Thistle Wire Works, Lee, Mass., manufacturer of screens used in paper mills, has been sold to George Roberts, Jr., Pittsfield, Mass.

The Franklin Moore Co., Winsted, Conn., traveling cranes, chain hoists, etc., has closed its plant and will liquidate as soon as its affairs can be settled.

The J. E. Windell Machine Mfg. Co., formerly of North Grafton, Mass., and now at 23 Hermon Street, Worcester, Mass., will move back to North Grafton. John E. Windell, president, is the son of the founder of the business.

The Atlas Mfg. Co., New Haven, Conn., cutlery, thimbles, hooks and other metal products, has purchased the Ansonia Novelty Co., Ansonia, Conn., after having operated the plant the past year on lease. It is proposed to expand.

The Middlesex County Commission, Court House, Cambridge, Mass., Alfred Cutting, in charge, will soon ask bids for a steam power plant for the County jail, estimated to cost \$150,000 with equipment.

The Goodyear Tire & Rubber Co., Akron, Ohio, has taken out a permit for a new factory branch and distributing plant at 63-67 Brookline Avenue, Boston, to cost about \$80,000.

The Grant Mfg. & Machine Co., Stillman Avenue, Bridgeport, Conn., has completed plans for a new one-story plant, 40 x 65 ft., to cost about \$18,000 with equipment.

The Chadwick-Boston Lead Co., 162 Congress Street, Boston, has awarded a general contract to J. D. Marr, 384

The Crane Market

THERE is a fair volume of inquiry for light overhead equipment, outstanding among such lists being those of the American Steel & Wire Co. and the Bayway Terminal, Bayway, N. J. Other inquiries in the overhead field are almost exclusively for single pieces of equipment. Inquiry for locomotive cranes is quite active, but prospective purchasers are slow to close business. A northern New York company is about to close on two locomotive cranes, the New York Central has seven pending and there are a number of inquiries for single machines that are expected to close shortly. The district engineer's office of the United States Army, New York, opened bids last week on a used Brownhoist locomotive crane. The high offer was from Forsythe Brothers, 30 Church Street, New York, dealers.

In the Pittsburgh district the American Sheet & Tin Plate Co. is expected to close shortly for a crane for Scottsdale, Pa., and the Carnegie Steel Co. is about to distribute orders for eight cranes for its Houston, Tex., warehouse. The Bethlehem Steel Co. is reported in the market for two ladle cranes for Johnstown, Pa. The St. Louis Coke & Iron Corporation, Granite City, Ill., is in the market for a gantry crane.

Among recent purchases are:

Boston & Maine Railroad, Boston, one 25-ton and three 10-ton overhead cranes from the Shaw Electric Crane Co.

Yosemite Valley Railroad, Merced, Cal., a 25-ton locomotive crane with steam shovel and pile driver attachments from the American Hoist & Derrick Co.

Trinity Portland Cement Co., Dallas, Tex., a 25-ton electric crawl-tread locomotive crane from the American Hoist & Derrick Co.

Acme Limestone Co., Snow Flake, W. Va., a 20-ton used Brownhoist locomotive crane with 1½-cu. yd. Hayward bucket, from Philip T. King, New York.

Consolidated Water Power & Paper Co., Grand Rapids, Mich., a 30-ton locomotive crane from the American Hoist & Derrick Co.

Union Tank Car Co. Chicago, a 22-ton locomotive crane from the Orton Crane & Shovel Co.

Elgin, Ill., sanitary district, a small capacity hand power crane from the Northern Engineering Works.

United States Gypsum Co., Chicago, a 1-ton, 41-ft. span, 3-motor overhead crane from the Northern Engineering Works.

Carnegie Steel Co., Pittsburgh, a 5-ton special design crane for the Duquesne works, from the Morgan Engineering Co., a 37½-ton, 85 ft. span crane for the Edgar Thomson works from the Alliance Machine Co. and a 15-ton, 54-ft. span crane for the Clairton works from the Cleveland Crane & Engineering Co.

Dorchester Avenue, South Boston, for a two-story and basement plant in the Roxbury district, 65 x 112 ft., to cost approximately \$50,000 with equipment.

The Lockwood Mfg. Co., Day Street, South Norwalk, Conn., manufacturer of hardware, has awarded a general contract to Russell Frost, Jr., 50 West Avenue, for a one-story building, 40 x 100 ft.

The Beacon Oil Co., 111 Devonshire Street, Boston, has applied for permission to proceed with a new storage and distributing plant at Fort Neck, New London, Conn., on property recently acquired. The entire project, including remodeling of present buildings and installation of equipment, will cost about \$150,000.

Fire, Sept. 30, damaged a portion of the plant of the Graton & Knight Mfg. Co., 356 Franklin Street, Worcester, Mass., manufacturer of mechanical belting, with loss reported at \$25,000.

The New York, New Haven & Hartford Railroad Co., New Haven, Conn., has awarded a general contract to J. N. Leonard & Co., 902 Chapel Street, for a locomotive repair shop addition at its Lamberton Street yard, estimated to cost \$45,000.

The Wallace Barnes Co., Main Street, Bristol, Conn., manufacturer of springs and other steel specialties, has awarded a contract to Joseph D. Devine, 113 Federal Street, for a one-story addition.

The United Shank & Findings Co., Whitman, Mass., a subsidiary of the United Shoe Machinery Corporation, has awarded contract to the Aberthaw Co., Boston, for a one-story building, 52 ft. x 186 ft., to cost approximately \$50,000.

Buffalo

BUFFALO, Oct. 4.

BIDS will be asked by the Rochester Gas & Electric Corporation, Rochester, N. Y., in about 40 days for the construction of a new steam-operated power plant, to cost approximately \$500,000 with equipment.

The Kittinger Co., 1893 Elmwood Avenue, Buffalo, manufacturer of furniture, has filed plans for a new plant at 900 Hertel Avenue, to cost about \$70,000 including equipment.

The State Hospital Commission, Capitol Building, Albany, N. Y., is asking bids until Oct. 27 for an electric generator for installation at the State hospital at Utica. Plans and specifications on file at the State department of architecture, Capitol Building, and Flatiron Building, New York.

The Consolidated Aircraft Co., 2050 Elmwood Avenue, Buffalo, has taken out a permit for a one-story addition, 50 x 160 ft., with extension, 35 x 40 ft., to cost \$27,000.

The Robins Conveying Belt Co. 15 Park Row, New York, with plant at Passaic, N. J., has acquired a controlling interest in the Hewitt Rubber Co., 240 Kensington Avenue, Buffalo, manufacturer of mechanical rubber products, and its subsidiary, the Gutta Percha & Rubber Mfg. Co., lately purchased by the Hewitt company, previously located at Brooklyn. The new owner will develop the local plant for its mechanical rubber and belt-manufacturing requirements and plans extensive production. Thomas Robins, president

of the purchasing company, will be chairman of the boards of the two acquired companies. Thomas Machett, vice-president and general manager of the Robins company, will become president and general manager of the Hewitt company, and general manager of the Gutta Percha company. John H. Kelly and Frank V. Springer will be vice-presidents of the Hewitt organization. It is understood that the Robins company will continue its main plant at Passaic, as heretofore.

The Chamber of Commerce, Geneva, N. Y., is having revised plans prepared for a one-story and basement foundry, 50 x 150 ft., to be leased to a concern whose name is temporarily withheld. H. Tusch, Waterloo, N. Y., is architect.

The Chemical Toilet Corporation, 811 Free Street, Syracuse, N. Y., manufacturer of septic tanks and kindred products, has awarded a general contract to the H. K. Ferguson Co., for an addition, 92 x 365 ft., with side extensions, 25 x 100 ft., and 21 x 42 ft., to cost \$100,000 with equipment.

The Rainbow Appliance Corporation 11 Hand Street, Rochester, N. Y., has been organized with capital stock of \$400,000 for the manufacture of automatic ironers for home and small laundry use. The company has been in business for some time and advises that the reincorporation will not be followed by any plant expansion at present.

Chicago

CHICAGO, Oct. 4.

SEPTEMBER, although a fair month from the standpoint of machinery sales, was not equal to August. Current buying is not particularly active, but dealers are optimistic because the recent machinery show gave them a large volume of prospective business to follow up. Actual inquiries also are more numerous, although widely scattered and individually small.

The Illinois Steel Co.'s list is being actively worked on, while that of the Pullman Co. is marking time. No further word has been heard relative to the General Electric Co.'s list at Fort Wayne, Ind., and dealers do not expect any of the business to be placed here. The International Harvester Co., Chicago, is in the market for machine tools for its Fort Wayne plant. That company is also enlarging its Chicago tractor plant. New equipment for the drop-forge shop, purchased from the Erie Foundry Co., Erie, Pa., includes 13 machines, ranging from a 10,000-lb. steam hammer down to a 1500-lb. hammer. The order also included six trimming presses, ranging from No. 20 to No. 14.

The Peoples Gas & Electric Co., Mason City, Iowa, is preparing plans for a new steam operated electric power house, to cost in excess of \$700,000 with equipment.

The Fansteel Products Co., North Chicago, Ill., manufacturer of radio equipment, will soon begin the construction of a new two-story plant, 100 x 100 ft., to cost \$80,000. Frank D. Chase, Inc., 720 North Michigan Avenue, Chicago, is the architect.

The Duston Auto Spring Mfg. Co., 2441 West Forty-eighth Street, Chicago, will erect a one-story brick factory, 55 x 120 ft., to cost \$14,000.

The Chicago & Eastern Illinois Railway Co., 32 South Michigan Avenue, Chicago, is considering the construction of a one-story forge and blacksmith shop at its repair yards at Evansville, Ind. It will cost \$70,000.

The Raymond Brothers Impact Pulverizer Co., 1319 North Branch Street, Chicago, manufacturer of pulverizing machinery, has awarded a general contract to the Leonard Construction Co., 37 South Wabash Avenue, for a one-story machine shop, 100 x 250 ft., to cost \$100,000.

The Crane Co., 826 South Michigan Avenue, Chicago, has asked bids on a one-story factory branch at Aurora, Ill., to cost \$75,000.

The Chicago Screw Co., 1028 South Homan Avenue, Chicago, will build a one and two-story factory, 116 x 124 ft., to cost \$120,000. The general contractor is J. Hammond Co., 3224 Flournoy Street.

The Sloan Valve Co., 4340 West Lake Street, Chicago, will build an addition, 101 x 135 ft. Alfred F. Alschuler, 28 East Jackson Boulevard, is the architect.

The Central Manufacturing District, 2001 West Pershing Road, Chicago, will build a garage and service station, 125 x 300 ft., to cost \$100,000. A. Epstein, 2001 West Pershing Road, is the architect.

Owing to a change in manufacturing policy, Montgomery Ward & Co., Chicago, have decided to place on the market their Springfield, Ill., plant. The property consists of a modern gray iron foundry, machine shops, and other factory buildings. The plant was built in 1920 and has never been occupied. It will be sold as a unit, though the foundry may be bought separately if desired.

The Northwest Machine Shop, Minot, N. D., F. E. Harrison, head, has plans for a new one-story factory, 100 x 100 ft., to cost about \$40,000 with equipment.

Sears, Roebuck & Co., Arthington and Homan Avenues, Chicago, operating a mail-order business, have plans for a one-story addition to their stove manufacturing plant at Kankakee, Ill., to cost approximately \$30,000 with equipment.

The Automatic Electric Co., 1027 West Van Buren Street, Chicago, has awarded a general contract to Robert Black & Co., 122 South Michigan Avenue, for extensions and improvements to cost about \$25,000 with equipment. A. F. Adams is president.

The H. G. Fischer Co., 2355 Wabansia Avenue, Chicago, manufacturer of X-ray equipment and other precision apparatus, has filed plans for a new two-story plant, 53 x 109 ft., to cost about \$75,000 including equipment. J. B. Robin & Son, 160 North La Salle Street, are architects.

The Sellner "Tilt-a-Whirl" Co., Faribault, Minn., manufacturer of amusement devices, parts and other equipment, will erect a new one-story plant, 60 x 150 ft., to cost about \$25,000 with machinery.

The Board of Water Commissioners, Denver, is asking bids until Nov. 1 for pumping machinery for the municipal water system, consisting of one 20,000,000-gal., one 15,000,000-gal. and one 8,000,000-gal. per day motor-driven centrifugal pumps, complete with starters and accessories; specifications at the office of D. D. Gross, chief engineer.

The Walworth Mfg. Co., 2436 South Fifteenth Street, Chicago, manufacturer of wrenches, valves, etc., has asked bids on a general contract for a one-story machine shop addition to cost about \$25,000. Headquarters are at 88 Pearl Street, Boston.

The Zack Mfg. Co., Chicago, manufacturer of ventilating equipment and devices, has acquired a three-story factory, 50 x 125 ft., at 2311 West Van Buren Street, and will remodel for a new plant.

The Quality Metal Bed Co., 1800 South Kilbourne Street, Chicago, is taking bids for rebuilding the portion of its one-story plant recently destroyed by fire, with loss in excess of \$75,000 including equipment. M. D. Leichenstein is president.

Indiana

INDIANAPOLIS, Oct. 4.

THE City Council, Elkhart, Ind., will ask bids in about 60 days for equipment for waterworks extensions, including pumping machinery, etc. The project will cost about \$90,000. The Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., is consulting engineer.

The Union Furniture Co., Batesville, Ind., has awarded a general contract to the William A. Gutzwiller & Sons Co., local, for a four-story addition, 31 x 120 ft., to cost \$85,000.

The Dana Water Co., Dana, Ind., will soon ask bids for equipment for extensions and improvements in its plant and system, including pumping machinery, elevated steel tank and tower and auxiliary apparatus. The Herr Engineering Co., Star Building, Terre Haute, is engineer.

The Roxana Petroleum Corporation, Shell Building, St. Louis, has plans for an addition to its oil refinery at Hesseville, Hammond, Ind., to cost about \$35,000. Wainwright & Vaughn, First Trust & Savings Bank Building, Hammond, are architects.

H. Warriner, 673 Broadway, Gary, Ind., architect, is completing plans for a three-story and basement automobile service, repair and garage building, 120 x 120 ft., to cost \$250,000 with equipment.

The Morristown Water Co., Morristown, Ind., will ask bids in about a week for equipment for a new waterworks, including pumping machinery, 60,000-gal. capacity steel tank and tower and auxiliary equipment.

The Pride Brothers Co., 102 South Third Street, Evansville, Ind., is having plans drawn for a three-story and basement automobile service, repair and garage building, to cost about \$75,000 with equipment.

Milwaukee

MILWAUKEE, Oct. 4.

SATISFACTION is expressed in local machine-tool circles relative to the state of trade, both as to inquiries and sales. Save for a number of the most important factors in the passenger car industry, business in the automotive industry continues to run into single items, but the aggregate is favorable.

The Nash Motors Co., Kenosha, Wis., has made public its purchase of new equipment costing \$600,000 for installation in its plant at Racine, Wis., for increased capacity. The Racine plant is given over to the production of the Nash Light Six, formerly known as the Ajax. Equipment is also being purchased for additions to the main plant at Kenosha, where the Nash Advanced Six is built, and specifications are being prepared for additional tooling at the Milwaukee plant to increase the output of the Nash Special Six.

The McNally-Tollefson Foundry Co., Stoughton, Wis., has been organized by John E. McNally, Nelle W. and E. M. Tollefson to take over and operate an existing foundry and machine shop. The capitalization consists of 1000 shares of common stock without par value and \$50,000 of preferred stock.

The Edwards Motor Car Co., 3601 Grand Avenue, Milwaukee, distributor of Dodge Brothers cars and Graham trucks, has let the complete contract to the Worden-Allen Co., Milwaukee, for a one-story repair shop, 150 ft. sq., and a one-story annex to the main sales and service building, 100 x 106 ft. With equipment, the additional investment will be in excess of \$100,000. Frank J. Edwards is president and general manager.

The C. M. Hall Lamp Co., Detroit, is abandoning its branch factories at Kenosha, Wis., in order to concentrate manufacturing at Detroit, and has sold the Kenosha plant, valued at \$750,000, to the Anaconda Copper Co., which will convert it into an additional unit of the Kenosha works of the American Brass Co. division. Clark Judd is managing vice-president at Kenosha.

The Wisconsin Tool & Mfg. Co., 1219 Third Street, Milwaukee, has started work on a one-story addition, 40 x 48 ft., and is buying some equipment.

The M. M. Moen Co., Mason City, Iowa, has taken the general contract to build a \$75,000 addition to the cold storage plant and warehouse of the Madison, Wis., branch of Oscar Mayer & Co., meat packer, Chicago. It will be 90 x 145 ft., part two and three stories, and was designed by Henschien & McClaren, architects and engineers, 1637 Prairie Avenue, Chicago.

The Rundle Mfg. Co., Milwaukee, manufacturer of bathroom fixtures and other sanitary ware, let the general contract to the Dahlman Construction Co., 456 Broadway, for erecting a boiler house and power plant extension, 46 x 50 ft. The work is in charge of Cahill & Douglas, engineers, 217 West Water Street.

The James M. Walsh Co., 117 Grand Avenue, Milwaukee, manufacturer of harness and saddlery, hardware, etc., with works at 131-137 Keefe Avenue, has acquired a 20-acre tract at Lake and Richards Streets as the site for a new plant. Construction work probably will not be undertaken until 1927. James M. Walsh is president and general manager.

Cincinnati

CINCINNATI, Oct. 4.

WITHOUT exception local machine tool builders report that sales in the first nine months of this year equaled or exceeded those in the same period in 1925. The average increase in business approximates 20 per cent. At least three manufacturers state that orders and shipments since the first of the year are on a par with those during the preceding 12 months. The past quarter has been characterized by unusually well sustained demand from consuming industries, the midsummer seasonal lull having developed only to a mild extent. While automobile makers have been the most important buyers, sales in the general industrial field made up a considerable percentage of the total business.

Production in local plants at present is being maintained on a fairly heavy schedule. Few builders have machines in stock and deliveries gradually are lengthening. In some cases eight weeks is the minimum time in which shipments can be made. Manufacturers agree that business during the remainder of the year should be good, some executives predicting that the next three months will be the best of the year.

Interest continues to center on purchases by the Delco Light Co., Dayton. Further orders placed by that company include 40 grinders and 22 milling machines with Eastern builders, four Pratt & Whitney profiling machines and a number of presses, the latter business being divided between Brooklyn and Toledo manufacturers. A Detroit automobile company bought seven 17-in. and four 11-in. lathes from a Cincinnati manufacturer. This transaction, added to previous purchases, makes a total of 36 lathes taken by this buyer in the past month. The Illinois Steel Co. is reported to be about to close for 15 heavy-duty engine lathes, as well as for a number of other machines. It is understood also that the Pullman Co. shortly will contract for 15 lathes for its Atlanta shops. The Missouri Pacific has ordered two 100-ton bushing presses and two 19-in. lathes, while a Detroit concern is the buyer of four 17-in. lathes. In the Cleveland territory a motor company closed for three 21-in. heavy engine lathes. The New York Central is expected to purchase three 4-ft. radial drills.

Among the sales the past week are the following: Two 36-in. engine lathes for a Chicago company; one 19-in. and one 17-in. lathe for another concern in Chicago; three 11-in. lathes for a Detroit company; a 48-in. carwheel borer for the Chicago, Rock Island & Pacific; a 7-ft. boring mill for the Ridgeway Dynamo & Engine Co., Ridgeway, Pa.; a 2-in. Acme bolt cutter for a Brooklyn company; a Morris 3-ft. radial drill for the American Die & Tool Co., Reading, Pa.; a No. 2 bending roll for the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.; and a 10-ft. Long & Allstatter gate shear for the New York, New Haven & Hartford.

The Mogadore Insulator Co., Mogadore, Ohio, is said to be contemplating the erection of a new one-story plant at Coventry, Ohio, 110 x 300 ft., to cost about \$145,000 with equipment.

The Kentucky Electric Power Corporation, Nortonville, Ky., is disposing of a bond issue of \$400,000, a portion of the proceeds to be used for extensions and improvements, including work under way for an additional unit at the local generating plant. Monro B. Lanier is chairman of the board.

The National Metal Products Co., Twelfth and Carter Streets, Chattanooga, Tenn., has begun the erection of two additions, 100 x 100 ft., and 65 x 100 ft. The present plant will be removed to the new structures and the buildings used in the future for storage. C. D. Martin is president.

The Grasselli Chemical Co., Guardian Building, Cleveland, is said to have secured zinc properties in the vicinity of New Market, Tenn., for the early construction of a new mill, to cost in excess of \$200,000 with equipment. Machinery will also be installed for mining.

Alexander M. Robinson, Georgetown, Ky., machinery dealer, has inquiries out for mechanical steam and heat dryers.

The Empire Chair Co., Johnson City, Tenn., is contemplating the erection of a new plant for the manufacture of other furniture than heretofore made, to include a three and four-story factory, each 80 x 150 ft., with adjoining structures. The entire project will cost about \$200,000 with machinery. Donald Beeson, Johnson City, is architect; R. N. Parker is president.

South Atlantic States

BALTIMORE, Oct. 4.

THE Five Points Auto Co., Durham, N. C., is preparing plans for a three-story service, repair and garage building, 60 x 225 ft., to cost \$110,000 with equipment.

The Fain Mfg. Co., Inc., 626 West Twenty-third Street, Norfolk, Va., desires to get in touch with a metal-working plant in its vicinity equipped to contract for the manufacture of special hardware products formed of cold rolled steel, copper plated.

The Neill-Buick Co., Session Street, Baltimore, is considering the erection of a three-story service, repair and garage building, 80 x 165 ft., to cost about \$100,000 with equipment. Daniel S. Neill is treasurer and manager.

The Valdosta Lighting Co., Valdosta, Ga., is planning extensions and improvements in its steam-operated electric power house, including the installation of additional equipment.

The Delaware School Auxiliary Association, du Pont Building, Wilmington, Del., is said to be planning the installation of manual training equipment in its proposed two-story and basement high school, to cost about \$250,000, for which bids will be asked at once on a general contract. Guilbert & Betelle, 20 Branford Place, Newark, N. J., are architects.

The Hackley-Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a belt-driven air compressor, 325 cu. ft. per min. capacity, 125 lb. pressure; also, for a number of electric voltmeters.

The Carolina Power & Light Co., Raleigh, N. C., is completing plans for a merger with the Yadkin River Power Co., Raleigh; the Asheville Power Co., Asheville, N. C.; the Pigeon River Power Co., Raleigh, and the Carolina Light & Power Co., Aiken, S. C. The consolidation will represent about \$20,000,000 in new financing, a portion of the fund to be used for extensions, including a new hydroelectric generating station on the Yadkin River, near Norwood, N. C., and a similar station on the Pigeon River, near the Tennessee State line.

Fire, Sept. 27, destroyed a portion of the cottonseed oil mill of the Planters' Oil Co., Albany, Ga., with loss estimated at \$85,000, including equipment. Plans for rebuilding are under consideration.

F. G. Hollis & Co., Bennettsville, S. C., are desirous of getting in touch with manufacturers of small refrigerating plant units.

The Buncombe County Board of Education, Asheville, N. C., is considering the installation of manual training equipment in its proposed new high school estimated to cost \$250,000, for which bids are being asked on a general contract until Oct. 11. William H. Lord, 17 Church Street, Asheville, is architect.

The Howard Machine Shops, Blackville, S. C., are desirous of getting in touch with manufacturers of oil-burning equipment suitable for stationary vertical steam boilers.

The Auto Glass & Radiator Shop, 123 Center Street, Augusta, Ga., is planning the early purchase of tools for its automobile radiator shop, including radiator cores, gas torch, wire solder, etc.

The R. S. Armstrong & Brother Co., 676 Marietta Street, Atlanta, Ga., machinery dealer, has inquiries out for electric motors, 60 to 75 hp. capacity, 3-phase, 60-cycle, 440-volt.

Karas, Papas & Co., Charlotte, N. C., will erect a two-story cold storage and refrigerating plant to cost about \$60,000 including equipment.

The Seaboard Silk Mills, Elberton, Ga., recently formed by interests connected with the Susquehanna Silk Mills, Inc., Sunbury, Pa., plan the construction of a power house at their proposed local plant. The entire project will cost in excess of \$100,000. Robert & Co., Bona Allen Building, Atlanta, Ga., are architects and engineers.

Cleveland

CLEVELAND, Oct. 4.

DEMAND for machinery is holding up to about recent volume. Manufacturers are booking considerable business in single machines, but there are few orders for lots of any size. The White Motor Co., Cleveland, purchased several production machines the past week. The Cleveland Planer Co. has booked an order from the Watts Laundry Machinery Co., St. Joseph, Mich., for a 36-in. planer and one from New Orleans for a 48-in. planer.

The Elwell-Parker Electric Co., 4205 St. Clair Avenue, Cleveland, has awarded contract to the Boldt Construction

Co. for a four-story, 40 x 120 ft., factory addition. The G. S. Ryder Co. is the architect.

The Art In Bronze Co., Cleveland, has completed plans for a foundry, 34 x 125 ft.

The Park Drop Forge Co., Cleveland, has placed a general contract with the George E. Rutherford Co. for an addition to cost \$3500.

The Leece-Neville Co., 5353 Hamilton Avenue, Cleveland, has placed a general contract with the National Concrete Fireproofing Co. for a two-story addition, 43 x 108 ft.

The McKinney Tool Co., Cleveland, is erecting a one-story, 40 x 100 ft., machine shop at 1688 Arabella Road, Cleveland, to cost about \$15,000. The Boldt Rapp Co., 5511 Euclid Avenue is the contractor.

Detroit

DETROIT, Oct. 4.

BIDS have been asked by the Howell Electric Motors Co., Howell, Mich., for a one-story addition, 40 x 200 ft., to cost about \$40,000 with equipment. R. S. Gerganoff, Moffatt Building, Detroit, is architect. It will also build another one-story addition, 130 x 138 ft., for general operating service.

The Chevrolet Motor Co., General Motors Building, Detroit, has acquired plant No. 7 of the General Motors Truck Co., Detroit, for the manufacture of axles and small automobile parts. Additions are planned on adjoining site. A large part of the present building will be equipped as a forge shop.

The Ford Motor Co., Detroit, is reported to have selected property at Richmond, Cal., as a site for a proposed assembling works for Pacific Coast business, to cost \$750,000 with equipment.

The Baker-Perkins Co., Hess and Williamson Streets, Saginaw, Mich., manufacturer of chemical and candy-making machinery and parts, has awarded a general contract to James A. Kernes & Son, Hess Street, for a one-story addition, 50 x 350 ft., to cost \$60,000.

V. J. Waier & Co., 403 Hofman Building, Detroit, architects and engineers, have plans for a two-story automobile service, repair and garage building, 115 x 130 ft., to cost \$100,000 with equipment.

The Hancock Mfg. Co., Charlotte, Mich., manufacturer of automobile hardware, has work under way on a one-story addition, 100 x 240 ft., sawtooth roof type, to cost about \$100,000 with equipment. J. C. Scott is secretary.

The National Tool Salvage Co., Detroit, recently organized, will take over and consolidate the Tool Salvage Co. and the National Grinding Co., each operating local plants. Expansion is planned.

The Buick Motor Co., Flint, Mich., has preliminary plans for an addition to its Detroit plant to be equipped as a gray iron foundry with initial output of close to 500 tons of castings per day. It will cost in excess of \$3,500,000.

The National Smelting & Refining Co., 1842 Livernois Avenue, Detroit, will soon take bids for a new plant at Ecorse, Mich., to cost approximately \$100,000 with equipment. Murphy & Burns, 3456 Cass Avenue, are architects. Harry Grevlin is secretary and treasurer.

The Department of Public Works, Detroit, has plans under way for a new municipal pumping plant to be known as the Connors Creek pumping station, to cost in excess of \$75,000 with equipment. G. S. Williams and L. E. Ayers, Ann Arbor, Mich., are consulting engineers.

The Electric Refrigeration Corporation, Detroit, has superstructure work under way on its new plant on Plymouth Road, to cost in excess of \$1,500,000. It is purposed to have the factory ready for service in February.

The Standard Automotive Parts Corporation, Muskegon, Mich., has awarded a contract to the Strom Construction Co., Houseman Building, Grand Rapids, Mich., for a two-story addition, a portion of the structure to be used as a power house. F. P. Allen, Houseman Building, Grand Rapids, is architect.

Gulf States

BIRMINGHAM, Oct. 4.

PLANs have been filed by the American Sheet Metal Works, Inc., 3500 South Carrollton Avenue, New Orleans, for a new one-story plant to cost \$26,000. Favrot & Livaudais, Hibernia Building, are architects. George Koehler is secretary.

The Valley Electric & Ice Co. Brownsville, Tex., is completing plans for an ice-manufacturing plant at McAllen, Tex., estimated to cost \$175,000 with machinery. The equipment will be electrically operated. The company is also having plans prepared for a one-story power substation to cost approximately \$50,000 with equipment.

The San Antonio Oil Works, San Antonio, Tex., is con-

sidering rebuilding the portion of its plant destroyed by fire Sept. 21, with loss reported at \$75,000 including equipment.

The City Council, Terrell, Tex., is in the market for equipment for the municipal electric light and power plant, including an oil-burning engine from 225 to 325 hp., direct-connected to electric alternator, 3-phase 60-cycle 2500 volts and auxiliary apparatus. J. P. Barnett is secretary.

The Yazoo & Mississippi Valley Division of the Illinois Central Railroad Co., Cleveland, Miss., is said to be planning extensions in its locomotive shops.

The Dallas Power & Light Co., Dallas, Tex., is disposing of a bond issue of \$2,000,000, a portion of the fund to be used for extensions. A. S. Grenier is vice-president.

The Arkansas Compress Co., 301 City National Bank Building, Corpus Christi, Tex., J. K. Cain, president, is said to have closed negotiations for the purchase of fifteen acres at Edinburg, Tex., as a site for a new plant to cost \$100,000 with machinery.

The F. P. Lyons Iron Works, Inc., Manchester, N. H., F. P. Lyons, president, has acquired property in the Harris terminal district, Tampa, Fla., as a site for a new steel fabricating plant. The initial structure will be two stories, equipped for a production of about 300 tons per month. The output will be devoted to steel buildings, railings, elevator inclosures, etc. A subsidiary company will be formed with a capital of \$50,000 under Florida laws to carry out the project. Mr. Lyons will be president; Samuel D. Tarrant, vice-president and treasurer, and C. M. Phipps, secretary.

The Common Council, Iuka, Miss., is considering the installation of pumping equipment in connection with a new municipal waterworks to cost \$50,000. The present system has been condemned.

The Texas Central Power Co., Frost Building, San Antonio, Tex., has authorized the immediate erection of an addition to its ice-manufacturing plant at Crystal City, Tex., 56 x 205 ft., including remodeling and improving the present plant. Considerable new machinery will be installed. John Marriott is company architect.

St. Louis

ST. LOUIS, Oct. 4.

PLANs are being considered by the Eureka Glass Co., Eureka, Kan., for new works to cost about \$250,000 with machinery. A site has been selected. J. W. Fenton is manager.

The Joseph Greenspon Iron & Steel Co., 3130 Hall Street, St. Louis, has filed plans for two new crane runways, 100 x 200 ft. and 100 x 323 ft., for 5-ton crane units.

Fire, Sept. 23, destroyed a unit at the plant of the Southeast Missouri Compress Co., Caruthersville, Mo., with loss estimated at \$200,000 with equipment. Plans for rebuilding are under consideration.

The Southern Malleable Iron Co., 5661 Natural Bridge Avenue, St. Louis, has awarded a general contract to the St. Louis Structural Steel Co., Syndicate Trust Building, for rebuilding its foundry at East St. Louis, Ill., recently damaged by fire, to comprise a one-story unit, 245 x 448 ft. to cost in excess of \$75,000 with equipment. B. B. Culver is president.

The Crane Co., 836 South Michigan Avenue, Chicago, is considering plans for a new factory branch, 175 x 200 ft., at Oklahoma City, Okla., with machine and pipe shops, pipe yard etc., to cost \$175,000 with equipment.

The City Council, Melrose, N. Mex., is asking bids until Nov. 1 for equipment for a municipal waterworks, including elevated steel tank and tower. The entire project is estimated to cost \$50,000. The Devlin Engineering Co., Central Building, Amarillo, Tex., is engineer. Elmer Harmon is city clerk.

R. H. Sanneman, Lee Building, Kansas City, Mo., architect, has filed plans for a new four-story automobile service, repair and garage building to cost \$120,000 with equipment.

The Kelley & Leonard Co., Springfield, Mo., is said to be planning the construction of a new ice-manufacturing and cold storage plant at Gravette, Ark., to cost in excess of \$45,000.

The Ponca City Milling Co., Ponca City, Okla., contemplates the construction of a power house at its new flour-milling plant, the latter to be six stories, 36 x 300 ft. The entire project is reported to cost in excess of \$450,000. Horner & Wyatt, Board of Trade Building, Kansas City, Mo., are architects.

The Conway Compress Co., Conway, Ark., is said to be planning the early rebuilding of the portion of its cotton compress plant destroyed by fire Sept. 26 with loss reported at close to \$250,000 including equipment.

The McKelney Construction Co., 3800 West Pine Street, St. Louis, has taken an award for the erection of a two-story automobile service, repair and garage building at

2625-27 Locust Street, to cost in excess of \$200,000 with equipment.

The Pocasset Grain & Elevator Co., Baird, Okla., is considering plans for a new cotton compress plant to cost about \$75,000 with equipment.

The Bush-Sulzer Brothers Diesel Engine Co., St. Louis, is in the market for a 42-in. geared head motor-driven lathe.

The Missouri Pacific Railroad is inquiring for two 1½-in. forging machines.

Pittsburgh

PITTSBURGH, Oct. 4.

MACHINE tool dealers are more occupied figuring on prospective business than in making sales, although if all transactions were reported the total probably would be fairly large. Current inquiries run chiefly to single tools, with a few calling for two or three machines. The Westinghouse Electric & Mfg. Co., which recently issued its regular quarterly list containing approximately 50 items has added two machines to the list. Equipment for the warehouse at Houston, Tex., for the Carnegie Steel Co. is yet to be bought and tools for a machine shop at Clairton, Pa., for that company still are pending.

The Youngstown Foundry & Machine Co., Youngstown, Ohio, has acquired more than half of the foundry property of the United Engineering & Foundry Co., Oak Street, Pittsburgh, and will remodel for a new plant. It is purposed to remove the present Youngstown business to the new location and install considerable additional equipment for enlarged output. The change will be made within the next five or six months.

The Ingram-Richardson Co., College Hill, Beaver Falls, Pa., manufacturer of enameled iron specialties, has asked new bids on a general contract for a one-story addition, 50 x 60 ft. Plans are also in progress for another one-story extension, 96 x 125 ft., for which bids will be asked soon. J. E. Martsoff, 512 Third Avenue, New Brighton, Pa., is architect for both structures.

The Midwest Steel & Supply Co., East Bradford, Pa., John Hillstrom, general manager, has awarded a general contract to Simonson & Lundgren, East Bradford, for a new one-story plant to cost about \$50,000.

The Duquesne Light Co., 435 Sixth Avenue, Pittsburgh, has acquired property, 115 x 204 ft., in the Glenwood section and is reported to be planning for a new power substation. The company will soon begin work on a substation at Ambridge, Pa.

The United States Engineer, Huntington, W. Va., is asking bids until Oct. 9 for a quantity of wicket irons, totaling 9200 lb., circular 29.

The Hookless Fastener Co., Meadville, Pa., has awarded a general contract to Constable Brothers, Erie, Pa., for its two-story and basement addition to cost \$45,000.

The Guarantee Liquid Measure Co., Rochester, Pa., manufacturer of gasoline pumping equipment, etc., will take bids on a general contract this month for a proposed two-story addition, to cost about \$50,000. The Rust Engineering Co., 211 Ross Street, Pittsburgh, is engineer. W. S. Townsend is president.

Walter, Wallingford & Co., Cincinnati, have given up their Pittsburgh office and George A. Wilson, since 1913 Pittsburgh resident manager of the company, will hereafter be representative in Pittsburgh for Pilling & Co., Inc., Philadelphia. Mr. Wilson will retain his present offices at 1432 Oliver Building.

Pacific Coast

SAN FRANCISCO, Sept. 27.

THE Edwards Ice Machine Co., Portland, has leased a two-story building at Powell and Landrean Streets, Emeryville, Cal., and will establish a new branch plant for the manufacture of heavy refrigerating machinery.

The Pioneer Rubber Mills, Pittsburg, Cal., is asking bids on a general contract for its one-story plant, 110 x 250 ft., to cost about \$100,000 with machinery. Benjamin G. McDougall, 353 Sacramento Street, San Francisco, is architect.

The White Co., Eleventh and Mission Streets, San Francisco, manufacturer of motor trucks, headquarters at Cleveland, has completed plans for a new one-story factory branch, 90 x 200 ft., at Fresno, Cal., to cost about \$70,000 with equipment.

The Southwest Metals Co., Tucson, Ariz., is considering the construction of a new concentrating mill at Humboldt, Ariz., with an initial capacity of 250 tons per day. It will cost in excess of \$225,000 with machinery.

The Union Ice Co., 354 Pine Street, San Francisco, has purchased property 150 x 200 ft., at Los Banos, Cal., for the construction of a new plant to cost in excess of \$50,000 with equipment.

The Anderson-Smith Motor Co., Van Ness and Bush Streets, San Francisco, has awarded a general contract to the Barrett & Hilp Co., 918 Harrison Street, for a new two-story automobile service, repair and garage building, to cost in excess of \$150,000 with equipment.

The Richfield Oil Co. of California, Inc., Los Angeles, is disposing of a bond issue of \$12,000,000, a portion of the fund to be used for extensions and improvements. The company was recently organized to take over the United Oil Co., Los Angeles, and other State oil interests. J. A. Talbot is president.

The Board of Education, Fresno, Cal., plans the installation of manual training equipment in its proposed new Edison technical school estimated to cost \$300,000. Felchlin, Shaw & Franklin, Patterson Building, are architects.

The Sierra Machine Co., Oakland, Cal., formerly operating a plant in the San Joaquin Valley section, has leased property at Dennison and King Streets and will establish a works for the manufacture of deep-well pumping equipment, parts, etc.

The Samson Tire & Rubber Co., Compton, Los Angeles, has filed plans for the construction of a new plant at Wilmington and Terebinth Streets, to cost about \$30,000 with equipment.

The Advance Auto Body Works, Los Angeles, will erect a new plant, 70 x 230 ft., with wing, 70 x 150 ft. to cost \$70,000. About \$10,000 will be expended for equipment. A monorail system running the length of the main structure will be installed. The Union Iron Works has been awarded contract for steel.

The Pioneer Paper Co., 5500 South Alameda Street, Los Angeles, is asking bids for the erection of a one-story addition, 60 x 120 ft. to cost \$45,000. Additional paper manufacturing equipment will be installed. J. H. Plunkett is general manager.

The Midway Gas Co., Ventura, Cal., will spend \$300,000 on an addition to its compressor plant which will provide a total of 4900 hp.

The Modern Stove Co., North 2659 Ash Street, Spokane, Wash., has been organized to manufacture stoves. George W. Bailey is head of the company.

Canada

TORONTO, Oct. 4.

BOTH machine tool inquiries and sales showed some improvement the past week. The Canadian National Railways have been in the market for tools for car shops, and it is understood that other small lists will shortly appear from this source. The automotive industry is placing orders in a small way, chiefly for one or two machines. A strong demand is reported for pulp and paper machinery, with some good inquiries and sales also announced for mining equipment.

Four 20,000-hp. units, instead of three, are to be installed at the Grand Falls development of the International Paper

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Co. in New Brunswick. The International Paper Co. is also carrying out other power development projects as well as erecting several large pulp and paper mills in Quebec and the Maritime Provinces.

The B. J. Coghlin Co., Ltd., 2050 Ontario Street, Montreal, manufacturer of railroad construction supplies, tools, etc., will build a new plant on Darling Street to cost \$20,000. The Newton Dakin Construction Co., Ltd., 10 Cathcart Street, has been awarded the general contract.

It is reported that the Duke-Price Power Co., Chicoutimi, Que., is contemplating the erection of a hydro-metallurgical building to cost \$12,000,000.

The Great Lakes Power Co., Sault Ste. Marie, Ont., proposes to build an addition to its local power plant and has awarded the general contract for alterations to its power canal at a cost of \$50,000 to J. J. Fitzpatrick, 127 Church Street, Sault Ste. Marie.

Western Canada

P. W. Graham has been awarded general contract for building an addition to the power house for the city of Moose Jaw, Sask., to house a 5000-kw. unit which will be added to the power plant equipment during the next twelve months.

Following a directors' meeting of the Consolidated Mining & Smelting Co., Ltd., held in Montreal Sept. 29, several extensions and additions to its plants in British Columbia were authorized. These include an increase in the daily production at the zinc reduction works; the enlargement of the customs lead zinc mill at Tadanae, doubling its present capacity of 300 tons a day; the installation of a new coarse crushing plant at the Moyie, St. Eugene, mill. Two steam-driven turbo-generators, each of 1500 kw. capacity, will also be installed at the Sullivan concentrator. The board also approved of an addition of 60,000 hp. to the plant of the West Kootenay Power & Light Co.

Foreign

THE American Chamber of Commerce in France, 32 Rue Taitbout, Paris, has received an inquiry (S. 3360) from a company in Paris in the market for American machinery for cutting and polishing plate glass; also for other American glass machinery. Another inquiry (A. 3359) has been received for American industrial oxygen.

The Administration General de las Usinas Electricas del Estado, Uruguay, is asking bids until Dec. 6 for two Diesel engines direct-connected to generators for the State electric plant. The units are to have a capacity of 275 kw. and 125 kw., respectively. Specifications on file at the Electrical Equipment Division, Bureau of Foreign and Domestic Commerce, Washington, reference Uruguay No. 42425.

In connection with canal construction at Corinth, Greece, P. M. Ktenas, chief engineer in charge, is in the market for electric drills of American manufacture, suitable for drilling submarine holes to a depth of 40 ft. in rock for explosive charges. Catalogs and prices of single, double and multiple drills should be forwarded to Gardner Richardson, commercial attaché, American Legation, Athens, Greece.

The Victorian Government Railways, Melbourne, Australia, are asking bids until Nov. 24 for a machine for hole grinding, with complete accessories.

The administrative council, Loanda, Angola, is arranging a plan for granting a concession for the construction of an electric power plant and street railroad system. Information at the office of the Electrical Equipment Division, Bureau of Foreign and Domestic Commerce, Washington, reference Angola No. 218571. The American Consulate, John W. Bailey, Jr., vice-consul, Loanda, also has data regarding the enterprise.

The Compania Agricola y de Fuerza Electrica, S. A., La Boquilla, Chihuahua, Mexico, is completing plans for the construction of a new hydroelectric generating plant on the Conches River, near La Boquilla, supplementing its present station in this section. The project will include the building of a power dam at Colina. The American Consulate, Chihuahua, Thomas McEnelly, consul, has information regarding the project.

Specifications have been issued by the State Electricity Commission of Victoria, Melbourne, Australia, inviting bids on water tube boilers with superheaters, economizers and accessories. The closing date is Dec. 15. Copies of these specifications will be on sale when received at the New York district office, 734 Customhouse, and the Chicago district office, 33 South Clark Street, of the Bureau of Foreign and Domestic Commerce. The price will be 3 guineas (\$15.33) for a set of three copies, which charge will be returned to bona fide bidders. A fourth or further copies will be supplied for 1 guinea (\$5.11) each, but this charge is not returnable. Each bidder will be required to deposit 1 per cent of the total tender price, but in no case more than £100 (\$486.60). The Electrical Equipment Division has been handling such bids heretofore and this deposit may be made with it.

THE LAST WORD

(Contributed by the Reader Service Department of the Iron Age Publishing Co.)

"At the moment of blowing in, the furnace was christened . . . with the breaking of a bottle of Apollinaris water."

—FROM THE IRON AGE's account of the starting of the new blast furnace at Everett, Mass.

If Andrew Volstead chances to read this he himself may, like us, shed bitter tears that blast furnace christenings are not exempted from the provisions of his famous but none too well heeded amendment.



FOR many years I believed that the alternative spelling of vacation was c-o-n-v-e-n-t-i-o-n. But how far from the truth this is. The great crowds that attended the Chicago and Detroit conventions did not come to be amused or entertained. They came to learn. Even the nights found them in the hotel lobbies, swapping ideas and experiences. This serious attitude toward conventions speaks well for the future of the industries the A. S. S. T. and the A. F. A. serve.

"Coke isn't any good. It couldn't possibly be any good. Anyhow, the furnace isn't built for it. Nothing can take the place of coal."

Is this an irate citizen of 1926, refusing to change his fuel? No, sir, it's merely the cry of the old-time foundryman in the days when the cupola thrived on anthracite.

Coke-selling in those days required a stout heart, for it was not only necessary to persuade the foundryman to make a trial, but to camp on his trail until he had actually used the new fuel, for if anything went wrong with the iron "that blankety-blank coke" was always blamed.

SEVERAL months ago we bemoaned the fact that so few American manufacturers make adequate use of the advertising space provided by the exteriors of their own factories. Being a firm believer in the omnipotence of the press, we modestly assumed that our delicately conveyed hint had precipitated a boom in the sign-painting business.

But a recent survey reveals that conditions are as bad as ever, maybe worse, for the factory with the attractive sign, telling the eager traveler who owns the factory and what is made in it, is as rare as a fulfilled pre-election promise.

The sign-painters' trust has given us not even a cigar, but nevertheless we crave the privilege of helping it convert to the sweet uses of publicity some of these manufacturers whose plants are born to blush unknown.

"Extra! Extra! Thieves steal copies of Iron Age." The Dow Chemical Co., Midland, Mich., writes: "Our binder has informed us that burglars broke into his storeroom and, among other things, carried away our unbound volume of IRON AGE. We hope you will be able to replace it."

These burglars, in their rough, ungente way, have honored us.

A. H. D.

